TOTAL QUALITY MANAGEMENT AND DEMING'S 14 POINTS: IMPLICATIONS FOR PRIMARY SCHOOLS

By

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DECLARATION

I certify that this dissertation contains no material which has been accepted for the award of any other degree or diploma in any institute, college or university, and that, to the best of my knowledge and belief, it contains no material previously published or written by another person, except where due reference is made in the text of the dissertation.

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ABSTRACT

Over the last several years, schools in Western countries have been coming under increasing pressure to improve their performance in relation to student learning outcomes and fiscal responsibility. These years have coincided with the decentralisation of management and leadership practices in these countries, ostensibly to improve decision making at the local level, but more specifically, to reduce spending in the schools sector. Influenced by these trends, schools turned to business to identify successful management theories that could be adapted to the school setting.

This study explored the nature of J Edwards Deming's Total Quality Management for business as a theoretical construct in relation to its applicability to the primary school setting. More specifically, Deming's Fourteen Points were rewritten for the school context, taking into account the latest research. The result was the development of the Schools and Total Quality Management (SATQM) questionnaire, which was administered to 148 teachers, senior staff and principals in 18 Tasmanian government primary schools.

The results of the data analysis indicated that the SATQM instrument had validity, and that TQM was an appropriate managerial underpinning for primary schools. However, it appeared that some of Deming's Fourteen Points enjoyed higher levels of agreement amongst respondents than others.

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Finally, I dedicate this study to my precious daughters, Claire, Amanda and Sophie. It is one of my most fervent desires for them, too, to come to appreciate and enjoy the pleasures, pain and satisfaction that personal study provides. A commitment to life long learning is of paramount importance to every human being if the planet is to survive much farther into the future. I will receive no greater joy in the latter years of my life than to see my girls rigorously engage with, and derive considerable satisfaction from, this essential personal challenge.

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CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

It is the intention of this study to examine the issue of quality management in Tasmanian primary schools, and more specifically, to examine the degree to which the managerial process that has become known as Total Quality Management [TQM] is applicable to the primary school as an organisation. A measurement instrument was specifically developed to assist with this task and was titled Schools and Total Quality Management [SATQM].

The concept of quality management is not new, either in the context of schools or, more particularly, within the general business community. One management strategy that has risen to prominence in the Western World

during, most notably, the 1980's and 1990's, has become known as Total Quality Management. This management philosophy, which was originally developed by Dr W Edwards Deming, and modified specifically for use in post-World War II Japan, has been implemented with the intention of effecting improvements to management practices in organisations, especially in respect of the corporate business sector.

However, there are some similarities between schools and organisations in the corporate business sector, while conversely, there are certainly some fundamental differences. Some of these similarities and basic differences will be addressed, in some measure, throughout the course of this study of the applicability of TQM to primary schools.

This Chapter is organised under the following headings: introduction; background; purpose of the study; significance of the study; statement of the problem; hypotheses; assumptions; limitations of the study; definition of terms; Deming's Fourteen Points; delimitations or scope of the study; and overview of the study.

Background

History of Total Quality Management

Towards the end of the 19th century, prominent American industrial engineer, Frederick Winslow Taylor, had introduced to American corporations the notion of 'scientific management'. It was Taylor's view that "...human performance could be defined and controlled through work standards and rules" (Walton, 1989, p. 9). His view of scientific management as a science, and as such, a strategy that could be studied and applied, led ultimately to the hierarchical, top-heavy American management structure. Whilst this structure did have some benefits, including the capacity to produce large quantities of products, it "...was also cumbersome and rigid and was slow to adjust to market conditions" (Walton, 1989, p. 9).

However, Taylor had introduced the idea of scientific management, which at the time, was a new concept.

Following on from the work of Taylor, statistician, Walter A Shewhart began studying, and implementing, the philosophical basis of quality management during the 1920's. The theory of Statistical Process Control [SPC], or Statistical Quality Control [SQC], was applied to help improve the quality of products, reduce variation in processes, eliminate waste and error, and

improve costs. Such a focus on process enabled emerging technologies to be readily utilised throughout manufacturing industries in the United States of America to enhance productivity improvements in terms of quality and reliability. These factors have become generally regarded by historians as having been of vital significance during that country's successful World War II involvement. This issue will be explored further shortly.

Dr Deming met Walter Shewhart during the 1930's, and was immediately impressed with his ability to understand random variation in any aspect of a worker's task, and in particular, Shewhart's capacity to recognise when to act and when to leave an operational process alone. Deming and Shewhart spent much time together studying, with Shewhart's theories of quality control becoming the basis of Deming's own work. One of the particular skills acquired by Deming was his capacity for developing sampling techniques, which proved enormous time savers, whilst maintaining the heavy reliance on quality control strategies.

World War II hastened both the pace and demand for quality technology. Gitlow et al., (1989, p. 10) observed that "the need to improve the quality of products being manufactured resulted in increased study of quality control technology and more sharing of information".

However, all this progress in relation to quality control began to dissipate at the conclusion of World War II. Many United States companies saw the whole issue of quality control as a wartime effort and therefore unnecessary in the booming post-war market.

Fundamentally, this post-war pressure on USA industries to satisfy the high consumer demand for goods, resulted in the focus of those industries changing from a quality base to one of maximising output to meet expectations. Consequently, the quality of the goods was sacrificed, as quality control came to mean end-of-the-line inspection. Costs associated with rectifying defects were easily covered by large profits that resulted from the huge numbers of items being produced. The techniques taught previously by Deming and his colleagues came to be regarded as time consuming and unnecessary, so they disappeared over time and were forgotten, much to Deming's chagrin. The huge lesson Deming gleaned from this development was the need to actively engage management in understanding, and applying pressure for, quality. This implicated strongly his subsequent work in Japan.

In contrast to the USA, Japan emerged from the war industrially devastated. It had lost traditional export markets during the war effort, and its natural

infrastructure was significantly damaged. The situation was desperate, as neither did Japan any longer have the capacity to grow sufficient food to feed its own people. This proved a catalyst for the formation of a group called the Union of Japanese Scientists and Engineers [JUSE], and it was the intention of this group to assist in the reorganisation and reestablishment of the country.

Over time, JUSE became aware of the work of Shewhart and Deming, and the group became particularly interested in the techniques of Statistical Quality Control.

Consequently, JUSE decided to write to Dr Deming and invite him to Japan to deliver a course of lectures to Japanese research workers, engineers and plant managers on quality control methods. Deming was delighted to accept, and arrived in Japan in June 1950.

In his early lectures, Deming discovered that his audiences, as large and as keen as they were, included only middle managers, such as plant managers, engineers and research workers. He recalled his frustration with his United States experiences where SQC had flourished for only such a brief period. He also remembered his key learning from that experience, and that was that managerial personnel needed to be involved in the learning process as well as

technical workers. He had learned that it was the people in management positions who would be required to apply the pressure within the workplace for quality products or services to be effectively institutionalised. Without this, Deming concluded, nothing would happen. This learning has become one of the fundamental tenets of what has become known as the Total Quality Management theory.

Therefore, Deming approached the JUSE president, Dr Ichiro Ishikawa, to make arrangements for a dinner meeting with the Kei-dan-ren, an association of Japan's chief executives. This meeting was so successful, that Deming was able to convince the Japanese to seize the opportunity to rebuild their economy with enterprises that had quality management at their very foundations. This was a unique opportunity because, to that point, any products carrying the 'Made in Japan' stamp were regarded, outside of that country, as junk. There was essentially nothing to lose for the Japanese and they accepted his advice and recommendations with relish.

So began the Japanese commitment to quality, a factor still prevalent in goods produced in Japan to this very day. The theory of what has become regarded in the Western World as Total Quality Management [TQM], or occasionally

as Total Quality Control [TQC], had been introduced, with ultimately spectacular results.

The application of TQM was enhanced significantly due to the Japanese cultural system of 'han', which facilitated a team-based approach to life, resulting in the creative energy of groups maximising quality management strategies, and ongoing permanent improvement.

Another American who assisted considerably with Japan's resurgence was Joseph Juran. Juran (1988) claimed that the beneficial consequences of human dynamics in quality management, in a Japanese context, were clearly evident, with the opportunity for self-development proving a positive catalyst for acquiring new skills, new motivations, improved job satisfaction, and personal advancement within the employee's organisation. The resultant benefits for organisations using the TQM approach included improved profitability and productivity, as well as reduced costs.

This revitalisation of industry in Japan, and the focus on management as a means of improving quality, generated an interest in the development of new models of management and quality control. Models developed by Deming and other management experts in statistical quality control, such as Joseph

Juran, alluded to above, were instrumental in establishing an era of quality management which spread into a worldwide phenomenon. This era has led to the emphasising of continuous improvement within a 'learning' culture, as promoted by Senge (1990). This whole issue will be explored further in Chapter 2.

As a footnote, it is perhaps significant that Deming really made his mark in the Japanese economy from the 1950's onwards, yet failed to receive appropriate accolades for his theories on leadership and management in the USA until very late in his life, his 80's to be exact. Some failing American businesses had been observing for some time the results of his work in Japan, and it was Ford in the USA, and others, that invited Deming back to his home country in 1980. There began the catalyst for TQM for businesses in the Western World and Deming's appropriate recognition in the USA.

Quality Management in the School Context

Prior to the 1980's, Australia's government school systems were largely centralised, which meant that the vast majority of decision making with regard to schools in general, and students' education in particular, was determined in the Education Department central office in the state or territory capital city. Schools would be informed of educational decisions through official

memoranda, circular, or other official publication. Educational decisions that affected schools in this way included aspects such as curriculum, appointment of professional teaching staff, school buildings and maintenance, relief teacher supply and payment, student welfare and discipline, staff development, and appointment and management of ancillary staff, such as office assistants and janitorial services. School budgets were determined centrally according to government policy and education department budget formulae. Monitoring school effectiveness was determined by system standards and assessed by an externally based inspection system.

The management of schools was organized according to policies developed externally to the school and school personnel were required to execute those policies. Only limited flexibility was available to make adjustments for the needs of a particular school. Essentially, schools were able to manage only their day-to-day functioning, with little capacity to influence policies that impacted significantly upon their operation.

However, in the mid-1970's, the governments of some Australian states, such as Victoria and Tasmania, began to encourage schools to become more autonomous in their curriculum development (Victorian Year Book, 1976).

By the late eighties, and throughout the 1990's, circumstances for government schools in most Australian states and territories changed considerably. Following similar developments in other western countries, such as England, the United States of America, Canada, and New Zealand, the imperative to decentralise the Australian Government School systems emerged. Indeed, none of these types of reforms occurred coincidentally. The driving force throughout the Western World in general, and nations belonging to the Organisation for Economic Co-operation and Development [OECD] in particular, was the pressure to control public expenditure, with a view to increasing efficiency and economy in governance.

The OECD paper, *Governance in Transition: Public management reforms in OECD countries* (1995), detailed many of the driving forces. It recognised that (p. 15):

> OECD economies are undergoing profound structural change. An increasingly open international economy puts a premium on national competitiveness and highlights the mutual dependence of the public and private sectors. Citizen demand is more diversified and sophisticated, and, at the same time, the ability of governments to deal with stubborn societal problems is being questioned. The policy environment is marked by great turbulence, uncertainty and an accelerating pace of change. Meanwhile, large public debt and fiscal imbalances limit governments' room for manoeuvre.

Therefore, the OECD set an agenda of fundamental change, noting the need to transform both behaviours and attitudes. It identified two critical areas for public service reform (1995, p. 15):

1. the need for a closer focus on results in terms of efficiency, effectiveness, and quality of service; and
2. replacement of highly centralised hierarchical structures with decentralised management environments.

The OECD report (1995) also highlighted the need to devolve authority and provide flexibility in managerial approaches, in order to facilitate the development of a 'performance-oriented' culture. Parallel to these requirements is the need to develop more stringent performance accountability procedures, together with appropriate target setting and reporting strategies.

Other reports emanating from Australia have highlighted similar intentions. The Federal Government's Report of the Industry Task Force on Leadership and Management Skills (1995), identified the importance of quality leadership and management skills amongst our managers in Australia, with the acknowledgement that "...good managers are the key to a more competitive economy and higher performing enterprises" (p. 61). This is entirely consistent with Deming's view of the importance of upper level management.

In delivering the 1994 Currie Lecture, Beare alluded to the movement towards local management of schools in Australia. He referred to the need to reform school management and to remake public school systems.

Even the Australian Education Union, [AEU], (1995), conceded that public schools would need to move closer to parents and local communities in order to prosper and survive. It stated that (1995, p. 10) "in the most advanced and successful workplaces of the future...it is the capacity for self management and individual initiative, working in teams, collective quality control, continuous evaluation, flexible problem solving, and innovative communications techniques that will be decisive". Furthermore, it observed that (1995, p. 12) "devolution and decentralisation will be resolved by bringing decisions about expenditure as close as possible to those affected by them...[and] within the framework of system responsibilities schools will determine those issues in which local decision making is most productive".

Caldwell (1993) put the case of the National Industry Education Forum [NIEF] in terms of the need to decentralise the management of Australia's schools. The recommendations were strongly in line with the OECD's (1995) expressed view. Moreover, however, Caldwell (1993, p. 15-18) detailed ten

forces that he claimed were shaping current patterns in management structure. In his list, Caldwell included the issues such as: public financial crisis; the need for efficiency in administration of public education; the need for flexibility and responsiveness; empowerment of teachers and parents; and the national imperative for a quality educational system. All of these issues correlated with the views expressed in the OECD report (1995).

Additionally, Caldwell sought to make the connection between school effectiveness and school improvement, but conceded that research had not yet revealed a direct cause-and-effect relationship between decentralisation of management and improved outcomes for students.

Caldwell (1998) continued to pursue the issue of demonstrating, through research, a cause-and-effect relationship between enhanced school autonomy and improved outcomes for students. However, in summary, Caldwell acknowledged that (p. 38)

> There is no doubt that, while factors underpinning the movement to self-managing schools are many and varied, there has always been an expectation that they will make a contribution to improved outcomes for students. There is also no doubt that evidence of a direct cause-and-effect relationship between self-management and improved outcomes is minimal.

This statement from Caldwell is quite profound given his strong involvement in the Victorian school reform program since 1993, called the 'Schools of the Future' program. This program had as one of its clear objectives and purposes (adapted from Hayward, 1993), "to encourage the continuing improvement in the quality of educational programs and practices in Victorian schools to enhance student learning outcomes".

Bishop & Mulford (1996), and Blackmore (1997) have been responsible for developing other studies that provide reasons to doubt the likelihood of student learning outcomes being improved as a direct result of schools being involved with changes to management structures, or more specifically, the Schools of the Future program in Victoria.

Indeed, Bishop and Mulford (1999) further asserted that their research called into serious question the value of continual imposition of centrally-imposed change processes. This contention had implications for this study, as Deming's theory of Total Quality Management, regardless of its strengths or weaknesses, would, following Bishop and Mulford, be likely to fail as a basic management tool if it were seen by school personnel to be yet another externally based panacea to solve all ills. This issue will be explored further in Chapter 6.

It is probably appropriate to record a note of caution at this stage. TQM in its initial form was developed as a management strategy to assist with the provision of quality products and services in the business context. The intentions of the TQM approach were, as observed by Deming (1998) in Point 1 of his Fourteen Points, (p. 23), "to become competitive and to stay in business, and to provide jobs". The intention was to improve quality by reducing variation and, thus, reducing costs, thereby creating a competitive advantage. Clearly, this has much appeal in the business context, and enjoyed high degrees of success with, for example Ford cars or Xerox copiers. In these instances, the output of the organisation is a product for sale, which is clearly a different scenario from the school circumstance, where human lives and futures are at stake in the context of the school's fundamental operation.

Whilst it is true that there is some applicability within schools for reducing variation, and hence, increasing profits and maintaining jobs, it could hardly be argued that this is the fundamental purpose for the existence of schools, especially government schools. However, some examples of where it would be advantageous for schools to reduce variation could include:

- the nature and consistency of the behaviour of some students;
- reducing the number of students who 'fail' or underperform at school;

- consistency of strategies used by teachers in response to certain student behaviours;
- ability of teachers and administrators to respond positively and consistently to parental requests or complaints; and
- how the school commits to celebrating the achievements of its students, staff and community members.

Indeed, in some contexts it could be argued that reducing variation would have a deleterious effect on the quality of school outputs. For example, learning and teaching are largely eclectic activities, and as such, do not benefit from cloning. School communities and school systems need to come to appreciate differences in teaching as they appreciate individual differences amongst students.

As well, it is clear that schools, and their 'products' and 'services' are far more complex than industries where inanimate objects are produced. The 'outputs' are sometimes not clearly measurable. Therefore, application of TQM as a managerial strategy in the school context would have to be done sensibly and sensitively, bearing in mind the 'people' nature of the school environment. One of the challenges of this study is to take account of these matters, whilst at the same time, ensuring that fair consideration is given to the application of

TQM principles in schools, as specifically measured by Deming's Fourteen Points. The task is to avoid appearing to merely impose another set of managerial rules or instructions on school communities with the intention of effecting positive change. This strategy has been shown by Bishop and Mulford (1999) to be foolish at best.

In the context of the above, Tribus (1992) provided a useful list detailing some of the important differences between education and industry. This list was enumerated as follows:

1. the school is not a factory;
2. the students are not the product;
3. their education is the product;
4. the customers for the product are several;
    - the students themselves;
    - their parents;
    - their future employers; and
    - society at large.
5. students need to be 'co-managers' of their own education; and
6. there are no opportunities for recalls. (p. 205)

This is profound advice, and is entirely consistent with Glasser's (1993) assertions, particularly in relation to the need for students to accept responsibility for their own learning in a non coercive environment. The outcomes of this study will be considered in relation to Tribus' advice.

Tasmanian Developments

In the Tasmanian context, the decentralisation process began in a significant way after the Tasmanian Government commissioned a private Victorian company to produce what became known as the Cresap Report, in 1990. This report recommended sweeping modifications to the fundamental operation of the Tasmanian Education Department, including to the extent of renaming it the Department of Education and the Arts.

Among the changes was a policy initiative to establish District Offices. The previous system of operation had three tiers: the Central Office, Regional Office, and schools. In the new system, Regional Offices were to be replaced by District Offices, with schools to assume most of the managerial responsibilities that had previously been the domain of the Regional Office. Although the three tiers were to be retained in the new structure, the deployment of responsibilities was to shift markedly toward the school level. According to Caldwell (1998, p. 45), "a self-managing school is a school in a

system of education to which there has been decentralised a significant amount of authority and responsibility to make decisions related to the allocation of resources within a centrally-determined framework of goals, policies, standards, and accountabilities". Therefore, following Caldwell (1998), the Tasmanian school system had taken a considerable step forward in the process of making Tasmanian schools 'self-managing'.

Accompanying the decentralisation of decision-making and management in schools, was, following the OECD report (1995), a need for some form of accountability. Interest in Tasmania revolved around identifying criteria for evaluating school performance. At around the same time in several states in Australia, school performance and review policies were being established by, in Tasmania's case, the Office of Educational Review.

As schools were now to be expected to be able to manage themselves efficiently, plan appropriately for the future, and be better able to report in an accountable manner, it was logical for principals to examine management models by which to operate.

These new models of school management needed to ensure that school organisation could be revitalised and reorganised to better meet the needs of

particular schools operating in specific contexts. Since operational models for schools were only in their embryonic stage of development, educational administrators turned to models that operated in a business context and attempted to adapt these models to the management of schools. One such model to be explored and adapted was Deming's Total Quality Management, as its application in the business sector had enjoyed such significant success over an extended period, and in a wide variety of settings.

Purpose of the Study

The purpose of this study was to survey teachers and principals in Tasmanian government primary schools, in order to examine the congruence or otherwise between the operational practices employed by the schools, and the measurable characteristics of Total Quality Management, as defined by Deming's Fourteen Points for implementation.

The study focused on the degree to which management practices recommended by TQM, and illustrated specifically by the application of Deming's Fourteen Points, were reflected in the primary school context, and the degree to which schools appeared to be applying the principles of TQM, either knowingly or unknowingly.

Significance of the Study

The results of this study may serve to guide and inform schools in relation to strategies which may enhance their operation as well as identifying any management practices that are deemed to be less effective. Therefore, the study has the capacity to implicate modifications to management practices in schools, which, despite the absence of definitive research confirmation, may, following Caldwell (1998), be to the benefit of children's learning.

School administrators and policy makers may use the results of this study as administrative practices are developed for schools involved in self-reviewing their effectiveness. In the Tasmanian context, the findings may inform school improvement processes identified during the mandatory Assisted School Self Review [ASSR] process.

The ASSR process, which is undertaken in a four-year cycle, is a major exercise in collaboration between the Department of Education, the school, and the community that it serves. It results in the preparation of a clearly articulated document, called a Partnership Agreement, that highlights findings from the data gathering phase of the process and identifies specific agreed targets for improvement by the school over the following three years (Department of Education, 1999).

Statement of the Problem

To what degree is the theory of Total Quality Management, in terms of Deming's Fourteen Points for implementation, applicable to the management of primary schools?

Hypotheses and Theoretical Framework

All the following hypotheses are written as null hypotheses. Whilst this may appear a little unusual, this decision has been taken in order to eliminate any bias. The assumption of 'no difference' achieves this successfully.

Hypotheses 1 to 14

There is no statistically significant difference between the mean scores on the sub-scales related to Deming's Fourteen Points:

1. Constancy of Purpose;
2. Adopting New philosophy;
3. Senior Staff Supervision;
4. Cost Minimization;
5. Improvement in Production and Service;
6. On-the-job Training;
7. Leadership;

8. Personal Empowerment;
9. Teamwork;
10. Artifical Goals;
11. Standards;
12. Recognition;
13. Professional Development; and
14. Responsibility for Action;

as measured by the Schools and Total Quality Management [SATQM] questionnaire, and as obtained by 'major formal role in the school' (principals, senior staff, and teachers) at the 0.05 level of confidence.

Hypotheses 15 to 28

There is no statistically significant difference between the mean scores on the sub-scales related to Deming's Fourteen Points (as listed in Hypotheses 1-14 above), as measured by the Schools and Total Quality Management [SATQM] questionnaire, and as obtained by 'total number of years taught' (less than three years, three to ten years, ten to twenty years, and more than twenty years) at the 0.05 level of confidence.

Hypotheses 29 to 42

There is no statistically significant difference between the mean scores on the sub-scales related to Deming's Fourteen Points, (as listed in Hypotheses 1-14 above), as measured by the Schools and Total Quality Management [SATQM] questionnaire, and as obtained by 'years taught at current school' (less than one year, one to three years, three to ten years, and more than ten years) at the 0.05 level of confidence.

Hypotheses 43 to 56

There is no statistically significant difference between the mean scores on the sub-scales related to Deming's Fourteen Points, (as listed in Hypotheses 1-14 above),(as measured by the Schools and Total Quality Management [SATQM] questionnaire, and as obtained by 'distance from District Office' (less than ten kms, ten to twenty kms, twenty to fifty kms, and more than fifty kms) at the 0.05 level of confidence.

Hypotheses 57 to 70

There is no statistically significant difference between the mean scores on the sub-scales related to Deming's Fourteen Points (as listed in Hypotheses 1-14 above), as measured by the Schools and Total Quality Management [SATQM]

questionnaire, and as obtained by 'major school role' (Early Childhood and Primary) at the 0.05 level of confidence.

Hypotheses 71 to 84

There is no statistically significant difference between the mean scores on the sub-scales related to Deming's Fourteen Points (as listed in Hypotheses 1-14 above), as measured by the Schools and Total Quality Management [SATQM] questionnaire, and as obtained by 'gender' (male and female) at the 0.05 level of confidence.

Assumptions

Assumption 1

Administrative practices are able to be applied, generally, to institutions that have different purposes.

Assumption 2

Schools and business organisations have administrative properties in common.

Sub-Assumption A

Administrative properties common to schools and business organisations are congruent with Deming's Fourteen Points for Total Quality Management.

Sub-Assumption B

Characteristics of Deming's Fourteen Points for Total Quality Management are able to be identified in school administrative practices.

Limitations of the Study

This study was conducted in 18 primary schools in Tasmania and the results of this study may not be able to be generalized to other school levels or to other school systems.

Definition of Terms

In order to facilitate an analysis of the theoretical underpinnings of models of quality management, it is necessary to examine definitions of terms and, in particular, the way terms are used by the authors of models of quality management.

However, Shah (1998) provided a concise commentary on how difficult it is to provide an appropriate definition of 'what is quality'. Shah (1998) suggested that "it could refer to very high standards, consistency (zero defects), fitness for purpose, or value for money, just to give some examples" (Editorial).

Juran (1992) expressed a similar view to Shah. He promoted two concepts as being pivotal to any discussion on quality: product features; and freedom from deficiencies. Juran alluded to these concepts, in the context of a definition of quality, in the following way: in the eyes of the customers, the better the features and the fewer the deficiencies, the higher the quality (adapted from Juran, 1992, p. 9). However, Juran (1992) continued to indicate that, in line with Shah, "it would be convenient to have a short, simple phrase to describe [the two concepts] together. To date there has been no consensus on adoption of such a phrase" (p. 9).

Bell (1993) premised that quality can have an absolute and a relative concept. The former (p. 2) "refers to goods [*or services*] that are of the highest possible standard" (my emphasis), while the latter (p. 2) "exists when something is judged to be fit for its purpose".

In the more specific sense, the Concise Macquarie Dictionary (1982, p. 1030) defines quality as "high grade, superior excellence", while the same publication (1982, p. 755) defines management as the "act or manner of managing: handling, direction or control".

Quality

According to Deming (1998, p. 2), " a product or a service possesses quality if it helps somebody and enjoys a good and sustainable market". The issues of 'helping somebody' and 'maintaining a sustainable market' are significant factors in relation to Tasmanian government schools, which, following Commonwealth government policies of recent years that actively promote competition between schools, are under greater levels of market pressure than ever before.

Feigenbaum (1991, p. 7) described quality as "the total composite product and service characteristics of marketing, engineering, manufacture, and maintenance through which the product and service in use will meet the expectations of the customer".

Glasser (1993) held that all human beings have five fundamental needs, these being love, power, freedom, fun and survival. He claimed that quality "...is anything we experience that is consistently satisfying to one or more of these basic [human] needs" (p. 19).

Defining quality management

Quality management is a term that has emerged from the corporate business and organizational settings. Quality management as an abstraction has acquired prominence in the field of business management since early in the twentieth century.

Juran (1988, p. 56) defined quality as a "fitness for purpose".

Crosby (1987, p. 123) referred to quality as a "conformance to customer requirements".

Deming (1998) also stressed the importance of attending to customer requirements. He stated that "the consumer is the most important part of the production line. Quality should be aimed at the needs of the consumer, present and future" (p. 5).

Total Quality Management

Ishikawa (1985) provided a definition for Total Quality Control, a euphemism for Total Quality Management. He stated (p. 45):

> Quality means quality of work, quality of service, quality of information, quality of process, quality of division, quality of

> people, including workers, engineers, managers and executives, quality of company, quality of objectives.

According to BS.4778: Part 2 (1991), TQM is:

> A management philosophy embracing all activities through which the needs and expectations of the customer and the community, and all the objectives of the organisation are satisfied in the most efficient and cost effective way by maximising the potential of all employees in a continuing drive for improvement.

A quality system for schools

Deming (1998, p. 62-63) provided some advice for school systems in relation to quality in schools. He stated that schooling should be

> ...a system in which these groups [pupils, teachers, school boards, boards of regents, parents] work together to achieve the aims that the community has for the school – growth and development of children, and preparation for them to contribute to the prosperity of society. It should be a system of education in which pupils from toddlers on up to university take joy in learning, free from fear of grades and gold stars, and in which teachers take joy in their work, free from fear in ranking. It should be a system that recognises differences between pupils and differences between teachers.

Barlovsky and Lawton (1994) described quality schools in this way:

> Quality schools are committed to creating enhanced learning environments through the purposeful and co-operative actions of all individuals engaged in the educational enterprise.
>
> By developing knowledge of the systems and processes through which education is delivered, quality schools are actively engaged in continuous self-improvement and the

> educational enrichment of the individuals and communities they serve.

Barlosky and Lawton (1994, preface, p. X) also outlined six key elements of quality schools:

1. they have an organizational purpose;
2. they enjoy quality leadership;
3. people work in teams, in terms of both staff and students;
4. they have quality processes focused on continuous improvement;
5. they have a service mentality in relation to customers/clients; and
6. they rely on rigorous data to inform improvement strategies,

and alluded to the interrelated nature of the elements in pursuing the fundamental goal of continuous improvement.

West-Burnham (1992, p. 8) contended that quality has always been central to any discussion about education, regardless of how quality is defined. He observed that "there are few other social processes where a concern for standards has been such a constant imperative". In this sense, he linked quality with 'standards' and 'continuous improvement', which are two of the key principles of TQM that he espoused. West-Burnham's definition is illustrated as Figure 1.

Focus	Internal and external customers
Definition	Meeting customer requirements
Scope	Every aspect of the organisation
Responsibility	Everyone
Standard	Right first time – fitness for purpose
Method	Prevention not detection
Measurement	Zero defects
Culture	Continuous improvement

Figure 1. Defining total quality management

West-Burnam further claimed that TQM is "...about much more that responding to clients. It is as much about creativity, teamwork, celebration, growth, recognition and excitement as creating effective processes."

Paine et al. (1992) asserted that customers are the only people who can determine the quality of goods or services. They added that other elements included consistency and dependability at low cost.

Glasser (1993, p. 22-25) proposed six conditions of quality schoolwork. They were:

1. there must be a warm, supportive classroom environment;
2. students should be asked to do only useful work;
3. students should always be asked to do the best they can do;
4. students should always be asked to evaluate their own work and improve it;
5. quality work always feels good; and
6. quality is never destructive.

He also contended that quality schools never coerced their students.

Summary

Taking the above into account, for the purpose of this study, the following definitions will apply:

> **Quality** describes a product or service that meets fully, or exceeds, the customers' expectations.
>
> **Total Quality Management** is a management philosophy that seeks continuous improvement in the quality of performance of all processes, products and services of an organisation, through the creative

involvement of all its people, with the intention of meeting fully, or exceeding, the customers' expectations.

Quality schooling is relevant to student needs and non coercive, encourages self-responsibility and cooperation, is delivered in an atmosphere of warmth and mutual concern, and is where the identified needs of students are met fully or exceeded.

Deming's Fourteen Points

This study used the management theory encapsulated as Deming's Fourteen Points as a basis for examining quality management strategies in the school context.

Deming (1998) outlined the Fourteen Points as enumerated below, and indicated that they were (p. 23) "... the basis for transformation of [American] industry". Furthermore, he asserted that (p. 23): "... adoption and action on the fourteen points are a signal that the management intends to stay in business and aims to protect investors and jobs".

1. Create constancy of purpose toward improvement of production and service, with the aim to become competitive and stay in business, and to provide jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.
7. Institute leadership. The aim of supervision should be to help people and machines and gadgets do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.
8. Drive out fear, so that everyone may work effectively for the company.

9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may encountered with the product or service.
10. Eliminate slogans, exhortations, and targets for the workforce asking for zero defects and new levels of productivity. Such exhortations only-create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system, and thus lie beyond the power of the work force.
11. a) Eliminate work standards (quotas) on the factory floor. Substitute leadership.
11. b) Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.
12. a) Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.
12. b) Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual merit rating and management by objective.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

Delimitations or Scope of the Study

The parameters of this study are confined to the perceptions of teachers and principals working in Tasmanian government primary schools.

Overview of the Study

This thesis is structured in the following way:

- Chapter 1 provides an overview of the study including a background to the study, the purpose of the study, research methodology, the significance of the study and definition of terms;
- Chapter 2 presents a review of the literature in the area, and a presentation of the theory on which the study is based;
- Chapter 3 provides a description of the research method selected for the study, including the development of the research instruments and data analysis procedures;
- Chapter 4 presents the results of the study;
- Chapter 5 presents a discussion of the results; and
- Chapter 6 examines conclusions, implications and recommendations for further research.

CHAPTER 2

LITERATURE REVIEW

Introduction

This chapter provides an analysis of Total Quality Management [TQM] as a theoretical construct and examines research concerning the implementation of TQM in practical settings. The chapter is organised according to the following headings: models of quality management; quality management models in schools, Deming's model of Total Quality Management; the new Schools and Total Quality Management [SATQM] instrument, and the School Level Environment Questionnaire [SLEQ] instrument, which was used as a validatory instrument.

Models of Quality Management

This study focusses on the philosophical and theoretical teachings of W. Edwards Deming which have become generally known under the title of Total Quality Management [TQM]. Deming's model of quality management has been chosen because of its pervasive use in the business world, and because of its having been widely adopted as a management tool in schools. However, there are many other management models that may be utilised by those interested in improving the management structure of their organisations.

In the context of the Western World, Deming, Joseph Juran, Philip Crosby and Armand Fiegenbaum would be widely regarded as the four best known management experts. Indeed, Berk and Berk (1993), West-Burnham, (1992), Dale, Boaden and Lascelles (1990), and Oakland (1992) all list them in this context. In seeking to indicate that the quality management approaches suggested by Crosby, Deming, Fiegenbaum and Juran are fundamentally 'variations on a theme', Dale, Boaden and Lascelles (1990) proceeded to provide a succinct summary of the main focus points by which the four men may be characterized (p. 20):

Crosby:	company-wide motivation
Deming:	statistical process control
Feigenbaum:	systems management
Juran:	project management

Crosby's theories on quality management rest on what he called four absolutes, which require a quality improvement program of 14 points. His four fundamental premises are:

- a definition of quality as conformance to requirements;
- a performance standard as zero defects;
- the measurement of quality is price of nonconformance; and
- it is always cheaper to do the job right first time.

His 14 points, though quite congruent with Deming's Fourteen Points, were dissimilar in a specifically comparative sense. They may be enumerated as follows:

1. management commitment. This is a significant statement in the context of Deming's early learnings, and was one of the most critical teachings that he was able to give the Japanese as they sought to rebuild their country in the 1950's. This was also the message that Deming had failed to deliver convincingly to the United States companies after Wold War II, and which catalysed their subsequent fall in quality production;
2. quality improvement team to be established to run the quality improvement program;
3. quality measurement, focused on identifying where potential quality problems lie;

4. understand the cost of quality, and its role in management;
5. raise the level of quality awareness;
6. take corrective action to obviate identified problems;
7. establish a committee for zero defects action;
8. institute supervisor training, to ensure that they fulfil their proper responsibilities;
9. hold a 'zero defects day' to highlight the change to employees;
10. encourage goal setting amongst individuals and their groups;
11. encourage employees to discuss their error-cause removal ideas with management;
12. give recognition and appreciation to those who participate;
13. establish quality councils to facilitate regular communication; and
14. do it all over again to emphasise the never-ending nature of quality improvement.

Juran (1988, p. 16) proposed a model of 14 main points for implementation of quality management practices. There was significant congruence between Juran's proposal and Deming's 14 Points, and Juran provided new insight into management's responsibility for improving quality and productivity.

Juran (1992) proceeded to articulate his plan for managing for quality by outlining what he referred to as 'The Juran Trilogy'. This Juran Trilogy consisted of three managerial processes, which Juran detailed as:

- quality planning (where products and processes are developed to accommodate customers' requirements);
- quality control (where quality performance is appraised, leading to necessary modifications); and
- quality improvement (which refers to the need to raise quality performance through rigorous innovation).

Juran (1992) also outlined his 10 steps to quality improvement. They were:

1. build awareness of the need and opportunity for improvement;
2. set goals for improvement;
3. organise to reach the set goals (establish a quality council, identify problems, select projects, appoint teams, designate facilitators);
4. provide training;
5. carry out projects to solve problems;
6. report progress;
7. give recognition;
8. communicate results;
9. keep score; and

10. maintain momentum by making annual improvement a part of the regular systems and processes of the company.

Unlike the other three Western management experts, Deming, Crosby, and Juran, Fiegenbaum did not detail a specific set of points or steps to achieve quality improvement, yet his approach was not significantly different from the others. Indeed, Feigenbaum (1991) did list twelve fundamental hallmarks that characterise a quality system. These indicators were:

1. it controls quality on an integrated, organizationwide basis;
2. it provides for primary quality decision-making ties with upper management;
3. it fosters a sufficient budgetary base and technical competence to permit preventative effort;
4. it establishes quality controls, which are a set of disciplines to be applied throughout the business;
5. it builds in quality control's coupling with customers on a positive feedforward basis;
6. it structures and reports quality costs;
7. it makes quality motivation a continuous process;
8. it structures an unique technological contribution;

9. it provides for continually measuring and monitoring actual customer quality satisfaction;
10. it provides good product service rapidly and economically;
11. it integrates product-safety and product liability control considerations; and
12. it adds a major, companywide workscope to the quality function. (adapted from Fiegenbaum, 1991, p. 106-108)

In noting these hallmarks, Fiegenbaum (1991) contended that a quality system exhibiting these attributes would provide customers with the managerial control required, the ongoing commitment to quality and the confidence these aspects bring to products and services.

Peters and Austin (1987) developed a more concise model of quality management. They identified three key areas for action which were compatible with Deming's 14 Points. The areas were:

1. constant care for customers;
2. concern for the training, development and personal needs for the workers; and
3. constant innovation.

Peters and Austin (1987) proposed that the key management strategy necessary to implement the three principles, what they referred to as the 'glue' in an organisation, was MBWA, or Managing By Wandering Around. Interestingly, MBWA was not a strategy to which Deming subscribed. However, Deming (1998) did proceed to provide the justification for his opposition. According to Deming (1998), the reason MBWA is hardly ever effective is that (p. 22) "...someone in management, walking around, has little idea about what questions to ask, and usually does not pause long enough at any spot to get the right answer". Moreover, Deming (1998) asserted that "...hopes without method to achieve them will remain mere hopes". Perhaps this is more about good advice for managers rather than a direct criticism of the MBWA strategy itself. If managers are to employ the MBWA strategy effectively, then following Deming, appropriate time and thought needs to be given to the activity, and what positive outcomes the manager seeks from it.

Conway (1992) argued that there were several issues for consideration in terms of implementing quality management practices in the business environment. One of the basic elements of his model was statistical control that, he argued, enabled his engineers to become more creative and innovative in the pursuit of gaining a market edge. This strategy also resulted in reduction in variation and, ultimately, cost reduction, Conway claimed.

Conway (1992) promoted six tools for quality improvement:

1. human relation skills, which stressed the responsibility of management;
2. statistical surveys, which encouraged the need for the gathering of data from customers;
3. simple statistical techniques which, in line with Deming, focused attention on the need for clear charts and diagrams;
4. statistical process control, which alluded to the charting of processes;
5. imagineering, which referred to the need to 'visualize' a process, procedure or operation, with a view to problem solving ; and
6. industrial engineering, which targetted common strategies of achieving improvements in the industrial context.

Another model of quality management was provided by Dale et al. (1990). The authors described the key elements of TQM as being:

- commitment and leadership of the chief executive officer. This assertion is consistent with Deming's belief about the importance of the upper management to be strongly committed. Otherwise, permanent progress, according to Deming, will be doubtful;
- planning and organising. This is analogous to Deming's Point 1, "creating a constancy of purpose";

- using tools and techniques. This enables the managerial team to, following Deming's Point three, 'cease dependency on mass inspection';
- education and training. Deming implored us to 'institute on-the-job training' (Point 6), institute 'leadership' (Point 7), and 'institute a vigorous program of education and self-improvement' (Point 13), again demonstrating congruence between this set of guiding principles and Deming's Fourteen Points;
- involvement. Deming's Point 14 demanded that 'everybody in the company be put to work to accomplish the transformation. The transformation is everybody's job';
- teamwork. Deming talked about breaking down barriers between departments and getting people to work in teams (Point 9);
- measurement and feedback. Deming's Point 5 provided advice to constantly improve production and service. There is a Deming Prize that is presented annually to Japanese companies for improved use of statistics in organisation, consumer research, product design and production. This prize has been awarded for over 40 years, which indicates the degree to which Deming's views on statistical measurement were valued; and
- cultural change. Deming's Point 2 gave instruction to 'adopt the new philosophy' whilst Point 14 stated that 'the transformation is everybody's job'.

As can be seen from the extrapolatory comments, the above set of elements is quite congruent with Deming's Fourteen Points.

Senge (1991) proposed a model of five main elements. These elements were designed to be the disciplines of, in Senge's words, a 'learning organisation', which has become a well worn phrase in leadership and management circles since the release of his thoughts in 1991. The five disciplines promoted by Senge (1991) were:

1. systems thinking, which is (p. 7) "...a conceptual framework, a body of knowledge and tools that has been developed over the past fifty years, to make full patterns clearer, and to help us see how to change them effectively";
2. personal mastery, which highlighted the need for (p. 7) "...continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and seeing reality objectively";
3. mental models, which refer to our (p. 8) "...deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action', essentially how we make sense of our world;

4. building shared vision, alluding to our set of principles and guiding practices that allow the translation of our individual vision into one that is shared; and
5. team learning, underlying the fact that (p. 10), "...teams, not individuals, are the fundamental learning unit in modern organisations'.

According to Senge, his model relied on the need for management to have developed an understanding of the impact of systems thinking, what he referred to as the 'fifth discipline', the discipline that integrates and fuses the others into a (1990, p. 12) "...coherent body of theory and practice". Furthermore, Senge argued that this highlighted the need for management to have a profound appreciation for how one aspect of a production line had the capacity to impact on others, creating what Deming might refer to as a 'chain reaction'.

In proposing his model of quality management, Block (1993) suggested that stewardship was a basic element, indeed, given that stewardship is fundamentally about holding something in trust for another, Block (1993) argued that the term 'leadership' should be replaced with 'stewardship'. Block proceeded to nominate a definition of stewardship (preface, XX): "the willingness to be accountable for the well-being of the larger organisation by

operating in service, rather than in control, of those around us". This was a profound insight, and offered a slightly different perspective than that espoused by most 'experts' in quality management. In the school context, it was a view almost identical to that espoused by Glasser (1993), who expressed in the strongest terms possible his contention for schools in general, and teachers in particular, to cease operating in a coercive way with students. He implored teachers to provide nurturing support instead of mandates, essentially, following Block, asking them to move towards a service mentality.

However, in the context of Deming's theory, the major thrust is about full engagement of all stakeholders in the transformation towards continuous improvement, about driving out fear of speaking up and contributing, about ceasing dependence on inspection, about breaking down barriers, about increasing pride in workmanship, about individual and group development. As such, Block's (1993) theory on stewardship is also extremely congruent with Deming's philosophy, including the Fourteen Points for achieving the transformation.

Additionally, Block (1993) asserted that (p. 6), "stewardship is the choice for service" (p. 49) "over self-interest", and the choices include partnerships and personal and group empowerment. Block (1993) also offered a significant

challenge to schools, which he referred to as 'patriarchal', and hence, not adept at serving their customers. Indeed, he stated that (p. 49), "schools only teach a portion of their students...". Block's challenge to teachers and schools is clear.

Tribus (1992, p. 206) emphasised the point that quality management is really about finding "...a different way to organize the efforts of people". He expressed the need to "...harmonize their efforts, ... approach their assigned tasks with enthusiasm...[and] ...participate in the improvement of how the work gets done". Generally, Tribus (1992, p. 206) accentuated the belief that "...quality management introduces a significant change in the relationship between those who manage and those who actually do the work".

In Australia, an institute was established to promote the use of TQM. This institute was named the Total Quality Management Institute [TQMI]. According to the institute's director, TQM emphasised a similar list to Tribus, although it outlined essential elements beyond those focusing on people. This list detailed the following points:

- the importance of customers;
- a focus on the value-adding system;
- the need for measurement and analysis;

- the role and involvement of people in continuous improvement; and
- understanding variation.

A list provided by Walton (1991) reinforced the view that quality management is particularly concerned with processes involving people in effective teams. This list outlined the following factors:

- customer satisfaction, which referred to 'internal' as well as 'external' customers. The former are the receivers of another person's work, where the 'job' is seen "...as part of a process and the customer as the next person down the line" (p. 38). This assertion has clear and high relevance in the context of schools. Each teacher is a customer of the one, or several, who preceded them;
- management by fact, obviating instinctive or inaccurate 'gut feel' decisions;
- respect for people, stressing that everyone in the organisation must be invited to participate equally in the quality improvement program; and
- Shewhart's *Plan - Do - Check (study) - Act Cycle*, which was introduced to the Japanese by Deming during the 1950's, and which became a key element of the successful application there of Total Quality Management principles. Shewhart's model is shown below as Figure 2.

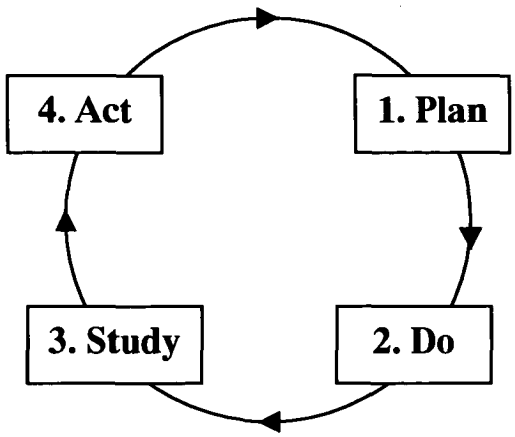

Figure 2. The Shewhart Cycle

Scholtes (1992) focused attention on quality leadership, and highlighted the following distinguishing characteristics, many of which are compatible with, and analogous to, characteristics of TQM:

- customer focus, meaning that (Scholtes, p. 11) "...an organisation's goal is to meet and exceed the customer needs, to give lasting value to the customer...", whether they be internal or external customers;
- obsession with quality;
- recognising the structure in work, which can be (Scholtes, p. 11) "...studied, measured, analysed and improved";
- freedom through control, where best-known methods or processes are used, while freedom is encouraged to eliminate problems, (Scholtes, p. 12) "...discover new markets, to develop new systems, and to gain greater mastery over processes." In quality leadership, Scholtes argues (p. 12), "there is control, yet there is freedom", an environment that Fullan (1988) or Peters and Austin (1985) may refer to as 'loose / tight';

- unity of purpose, (Scholtes, p. 12) "...in accord with a clear and widely understood vision...[in an environment that]... nurtures total commitment from all employees";
- looking for faults in systems, not blaming individuals for problems;
- teamwork and partnerships within the workforce; and
- continued education and training, where everyone is committed to learning constantly.

According to Scholtes (1992), TQM is characterised by an organisation's improved capacity to:

- better satisfy the needs of customers, by listening more effectively to them;
- improve productivity significantly;
- improve competitive performance for long-term strength, not short-term profit;
- provide employees with more rewarding and secure jobs;
- encourage 'workers' to contribute their knowledge to improving processes; and
- adapt quickly to new technologies.

One of the key assertions of Deming and other key players in the 'quality' movement since the early 1950's, was that in excess of 85% of problems with

organisations are from causes emanating from faults with an organisation's management practices, and only 15% are caused by an individual worker or isolated event. Deming (1998, p. 315) had modified this assertion upwards:

> I should estimate that in my experience most troubles and most responsibilities for improvement add up to proportions something like this:
> 94% belong to the system (responsibility of management)
> 6% special

Juran (1998) also asserted that it is possible that the major opportunity for performance improvement lies in improving the system, which, it was claimed, could not occur effectively without a management action and support from all levels of the organisation. The essential paradigm shift, it is asserted, must be from 'pleasing the boss' to 'serving the customer'. Juran claimed that this was the path to continuous improvement, the basic tenet of the principles of TQM.

Fox (1991) identified six steps in the implementation of modern quality management. These steps were: firstly, demonstrate top management commitment, consistent with one of Deming's most fervent beliefs; secondly, establish the current state of quality, relying on accurate data gathering; thirdly, determine quality strategies, implicating careful planning; fourthly, educate management in TQM, following up step one; fifthly, raise quality

awareness everywhere, providing the reminder, following Deming, that the transformation is everyone's responsibility; and finally, institute never-ending improvement, in agreement with Deming's fourteenth point.

Cook (1990) promoted seven guiding principles which underpin the successful transformation of an organisation to quality management. These principles were:

1. prevention not detection;
2. a radical change is needed;
3. the process needs to be management led;
4. everyone is responsible;
5. costs of quality;
6. looking at the costs of quality reinforces the drive to change management practice; and
7. right first time. (adapted from Cook, 1990, p. 15)

Hough (1992) proposed a 'paradigm shift' for educational administrators. He asserted that total quality is a mindset, and as such, requires a mind shift, and provided a reminder of the need for 'managers' to 'lead'. Hough (1992) also referred to the problem of educators being overly dismissive of the total quality movement as a manufacturing related concept, and not one that had as

much relevance in a service industry, such as education. However, Hough (1992) dismissed this view when he stated that "it would be a grave underestimation of the power and scope of 'total quality' thinking to regard it as a manufacturing based logic system" (p. 7). Hough (1992) concluded his paper by imploring educators to "...pay increasing attention to 'tomorrow's' educational organisation and its practices - even if it is only to prevent non-educators imposing their 'design concepts' in an ad hoc sequence of enforced change (p. 10)". In the context of Bishop and Mulford's (1999) warning about general rejection of externally imposed management structures, Hough's advice is timely and highly relevant.

Peters (1994) listed six key ideas that he claimed were activating transformation in businesses. They were:

1. Total Quality Management. Superior quality is essential, asserted Peters (1994), but he warned that this may no longer be enough to provide a competitive advantage as everyone is doing it. But it is the necessary starting point;
2. re-engineering. This referred to the need for streamlining leading to the reinvigoration of key business processes, and again it is essential, stated Peters (1994), but not enough;

3. leveraging knowledge, which referred to the need to plan for the development of knowledge in a knowledge-based world and economy. This point correlates with Deming's (1997) 'System of Profound Knowledge', which (p. 92), "...provides a map or theory by which to understand the organisations that we work in", and underpins Deming's Fourteen Points as the application to achieve the transformation of management to one of optimisation;
4. the curious cannibalistic corporation. Peters (1994) contended that innovation is now mandatory, so attributes of adventure, boldness, risk taking and cherishing failures are of critical significance to an organisation's ongoing survival and success;
5. the virtual organisation. Peters (1994) advised that (p. 17) "...you need instant access to the best resources from wherever, whenever, to get the job done...now impermanence and improvisation are markers for success", given today's global market opportunities. Interestingly, this opportunity also exists for schools; and
6. empowerment, whereby Peters (1994) provided the reminder that people are now any organisation's greatest asset. This situation has always been espoused, but is reality now. Peters (1994) presented the view that engagement of employees was the most critical factor in the

transformational process. This correlates with just about all of the currently promoted management models.

Covey, (1996) identified seven principles of highly effective people, which he referred to as 'habits'. Despite the fact that Covey did not present his ideas as a management theory per se, competent managers could well model themselves on the seven habits identified:

1. be proactive;
2. begin with the end in mind;
3. put first things first;
4. think win/win;
5. seek first to understand ... then to be understood;
6. synergise. According to Covey (1996, p. 262-263), "synergy is the essence of principle-centred leadership ... it catalyses, unifies, and unleashes the greatest powers within people ... [because] ... the whole is greater than the sum of its parts". This equates to the power of teams, as reported by other writers; and
7. sharpen the saw, which in Covey's (1996) view, is about personal renewal, (p. 288), "it's preserving the greatest asset you have - you. It's renewing the four dimensions of your nature - physical, spiritual, mental, and

social/emotional". After all, as Peters (1994) asserted, the individual person is the most important asset of any working organisation.

Summary

In summary, whilst it is acknowledged that there is a wide variety of quality management models evident in the literature, and from research, Deming's Fourteen Points is a well known, highly regarded and heavily used model which is entirely appropriate as the foundation upon which this study is based. At the very least, it provides a theory of management that provides a structure within which to discuss the job of any manager, at any level. It can be seen to form the basis of a number of subsequent management models, such as those proposed by Block (1993), Peters (1994), and Covey (1996). It also certainly provides a theoretical underpinning for discussion about appropriate managerial strategies as they relate to self managing schools.

Models of quality management in schools

Fullan (1988) outlined a set of ten guidelines for individual implementation by principals, on the premise that they be part of an wholistic strategy, and not seen as isolated actions. Furthermore, Fullan (1988) asserted that effective leaders, whilst being capable planners, managers and strategists, have "...a bias for action..." (p. 27).

Peters (1996) suggested that there were so many management models available that the differentiating factor in implementing quality management procedures was the ability to actually get on and do it. This is analogous to Fullan's 'bias for action' and Deming's 14th Point of engaging all in effecting the transformation.

Maeroff (1993) saw the transformation in a quite simple way. The task was to base the change process on the development of empowered teams, thereby enabling the school to move forward.

Barlosky and Lawton (1994, preface, X) identified six key areas for action in relation to developing a quality agenda for education. The areas listed were:

1. teams;
2. leadership;
3. customers and clients;
4. process;
5. managing data; and
6. organisational purpose.

As well as providing a distinctly Australian perspective, Paine et al. (1992, p. 14) proposed a three step model for achievement of what was referred to as Total Quality Education (TQE). Paine et al. (1992) described his version of how to bring about continuous improvement in TQE. They asserted that leadership required 'the scientific approach', which alluded to the need to base assumptions about the school's management strategies on scientific data, and the need to 'work as a team'.

In promoting the positive educational consequences of implementing Deming's management processes, Holt (1993) provided a clear reminder that they do not constitute "...a quick fix, since it calls for a fundamental change in the [school's] culture" (p. 384). Holt (1993) also indicated how vital trust is within an organisation and saw "...the pursuit of quality as a moral enterprise, something good to do" (p. 385). Isn't this fundamentally what good schooling is all about?

Fenwick and Hill (1994) raised the issue of a 'Deming Learning Place', in contrast to a 'school'. They proposed that the Deming Learning Place would evidence a 'celebration of diversity', where all children would be treated equitably and provided with opportunities to succeed. Another characteristic would be the 'construction of an experiential core', thereby eliminating

privileged groups. 'Wide use of different teaching methods and strategies' would enable successful experiences for all children, and the 'incorporating the concept of community as the school' would remove negative tracking processes. Instead, there would exist a greater feeling of community, with an overall synergy and purpose. Finally, the Deming Learning Place would oversee the 'abandonment of competition, control, and containment as the modus operandi of schools', resulting in what Glasser (1993) might call a non-coercive environment where students accept increasing levels of personal responsibility for their learning.

Murgatroyd and Morgan (1993) described five critical features of successful TQM organisations, and expanded these features in relation to application to schools. The features were described as:

1. alignment within the organisation, or 'constancy of purpose', as Deming may have put it;
2. a detailed understanding of customer-driven and process-oriented quality strategies;
3. an organisation based around teams, team development and teamwork;
4. the need for innovation and setting of seemingly unrealistic goals as a means of achieving outstanding performance outcomes; and

5. the systematic daily management of the organisation through use of effective measurement and evaluative tools.

Murgatroyd and Morgan (1993, p. 61) also displayed a profound understanding of the need for distinctively different roles of teachers, as customers and suppliers. They provided a model that illustrated these differences, and this is shown as Figure 3:

Teacher as customer	**Teacher as supplier**
Work completed by pupils	Teaching and learning outcomes for pupils
A working environment	A customised working environment for pupils
Information of previous pupil performance	Assessment and testing of pupils
Induction and training in expected roles	Reporting and giving feedback on pupils
Evaluation and appraisal data from inspectors, evaluators	Counselling and mentoring of individual children

Figure 3: Teachers as customers and suppliers

Tribus (1992) maintained that wider communities ought to be able to expect educational provision from schools in four categories:

1. knowledge, in the context of constructivism, whereby the learner is able to construct meaning from recent new experiences based on previous knowledge and experience. This facilitates wider generalisation;

2. know-how, which, according to Tribus (1992, p. 216) "...enables us 'to do'. Know-how takes us past merely understanding. It enables us to put knowledge to work";
3. wisdom, which enables decision making based on personal priorities; and
4. character, which is a combination of the other three attributes, together with motivation.

According to Glasser (1993, p. 178-180), there are four significant procedures essential to the process of implementing quality management practices in schools. They are:

1. continuing education for the workers;
2. lead-managing, as taught by Deming and others;
3. understanding and using control theory; and
4. treating all who work in the organisation as professionals, assuming that, once they learn to do their work, they usually know as much or more about how to do it well as anyone else - as professionals, however, they are always open to learning to do it better.

Glasser (1993) also indicated that a quality school must manage students without coercion, and a school would only ever achieve this target by increasing the number of teachers who manage children in this way. Deming

would certainly agree with this premise, as he implored leaders to 'drive out fear' (Deming's Point 8), 'break down barriers' (Deming's Point 9), 'eliminate slogans, exhortations and targets' (Deming's Point 10), and 'remove barriers to pride in workmanship' (Deming's Point 12). Block (1993) also warned against coercive activities in the workplace, such as top-down staff or student appraisal systems, which carry their inherent reward and punishment systems. As Block (1993) insisted, (p. 199) "it is deeply self-defeating to use appraisal as an instrument of change".

Glasser (1993) also described a powerful image of a quality school, which should prove a considerable challenge to educators world wide. It stressed the need for a non-coercive relationship to have been developed between administrators and teachers, staff and community members, and teachers and students:

> With no coercion and in an atmosphere of warmth and concern for all, the [quality] school would be an educational experience unlike any that students had ever had and much different from any that their parents and teachers ever had. The theme would be quality work and self-responsibility, and the goal of all students would be to discover that education is the most powerful tool available to improve the quality of their lives. All would be involved in taking responsibility for everything that went on at school. The staff would be there to help students get the education that all students want, not to make them learn and punish the ones who did not learn enough. There would be no elitism. All would be eligible for whatever the school had to offer. It

> would be up to each of them to discover what was needed to get a quality education for themselves and to help each other get the most from the school (p. 292-293).

Mulligan (1992) reported that in the USA, Virginia's Department of Education was sufficiently committed to the educational applicability of Deming's quality management techniques that it received a federal grant to provide quality management training and ongoing support to test the idea. One of the schools engaged actively in the program was McAuliffe, the entire staff of which underwent a business-style four-day quality training program, which had three basic threads:

1. "interactive skills. How to initiate, react to, and clarify ideas;
2. problem solving skills. How to identify and analyse problems, collect and display appropriate data, and select, implement, and evaluate solution; and
3. the quality improvement process. How to identify the 'customers' and the product or service that represents 'output'; how to plan, organise, and monitor for quality" (1992, p. 2-3).

House (1992) proposed Deming's teachings as a catalyst for a new design for preparing educational administrators. This followed the findings from the [American] National Commission for the Principalship, which was jointly sponsored by the two peak principals associations in the USA, the National

Association of Secondary School Principals and the National Association of Elementary School Principals in 1990. The commission concluded that "earlier theory-based constructs [of preparation] have become largely obsolescent" (1990, p. 1), and called for new programs to be designed.

The commission identified 21 performance domains for the principalship, which are included in this study as Appendix I. Ten of the domains were not included in the subsequent discussion which sought to link those that could be closely associated with Deming's theory of management, while the remaining 11 domains were organised into four sections as follows:

1. leadership. Deming (1986) characterised his entire work as a theory of leadership, and outlined that a requirement for the "transformation of the Western style of management... [is] ...that managers be leaders" (p. 54). All of Deming's Fourteen Points are fundamentally about quality leadership, and the attributes of a good leader, according to Deming (1991) are shown below in Figure 4;
2. information collection and usage (information collection, problem analysis, judgement, measurement and evaluation, resource allocation, instructional program, and curriculum design). Deming's point five of the fourteen points, 'Improve constantly and forever every process for

planning, production and service', is accomplished by gathering information and using it;

3. staff development. Deming's points six and 13 stress the importance of 'on-the-job training' and vigorous programs of 'education and self-improvement'; and
4. motivating others. This issue relies on high levels of trust, or as Deming;s Point eight puts it, 'drive out fear' Points nine through to twelve also detail barriers to be overcome.

Leadership attributes
1. They understand how the work of their group fits in to the aims of the company.
2. They work with preceding stages and with following stages.
3. They try to create for everybody joy in work. They try to optimise the education, skills, and abilities of everyone, and help everyone to improve.\
4. They are coaches and counsellors, not judges.
5. They use figures to help them understand their people and themselves. They understand variation. They use statistical calculation to learn who, if anybody, is outside the system, in need of special help.
6. They work to improve the system that they and their people work in.
7. They create trust.
8. They do not expect perfection.
9. They listen and learn.

Figure 4. Attributes of a Leader, according to Deming (1991)

Generally, House (1992) accentuated the importance of developing a more appropriate, relevant and dynamic training structure for school principals, and

he advocated strongly that Deming's teachings ought to provide the basis for this new approach. Indeed, his paper concluded as follows (p. 14):

> A redesigned educational administration program based on the Deming knowledge for improvement would result in school administrators being better prepared to respond to changes presently faced and those that lie ahead.

Another procedure for measuring companies that excel in quality management and quality achievement is entitled the Malcolm Baldridge National Quality Award, and reported by Arcaro (1995). The award was initially a recognition opportunity for commercial companies, but has included a special category for schools since 1995. Figure 5 details the initial criteria for the award in the commercial sense, together with the modified descriptors for education. The congruence of these criteria with Deming's Fourteen Points is clearly apparent:

Commercial Award Category		**Education Award Category**
Customer-driven quality	=	*Customer focus and satisfaction*
Leadership	=	Leadership
Continuous improvement	=	*Continuous improvement*
Employee participation and development	=	*Total participation and staff development*
Fast response	=	*Quality in operational results*
Design quality and prevention	=	*Problem prevention and resolution*
Long-range outlook	=	Strategic quality planning
Management by fact	=	Management by fact
Partnership development	=	Partnership development
Corporate responsibility	=	Community responsibility

Figure 5: The Malcolm Baldridge National Quality Award Criteria

Arcaro (1995) proceeded to detail his model for Total Quality Schools, consisting of five preliminary elements, followed by five subsequent attributes once significant progress has been evident. These attributes were all drawn directly from the award criteria outlined in Figure 5. According to Arcaro (1995), the elements requiring early attention are shown in italics in Figure 5, while those requiring subsequent focus are shown in normal text. A series of questionnaire forms, for use by schools, supplements the text. These survey instruments, though not directly linked to Deming's Fourteen Points, are entirely congruent with them.

In terms of effecting the transformation to a Total Quality School, Arcaro (1995) asserted that:

> Quality must come to mean as much to school board members and administrators as it does to students and staff. Achieving a Total Quality School creates an environment that enables everyone to bring measurable quality improvement to their work processes (p. 100).

Cuttance (1994, p. 2) provided a list of dimensions and characteristics of a quality system for schools. This list is detailed below as Figure 6:

Organisational Dimension	Characteristics of the Quality System
External	Client focus
Leadership	Direction and purpose
Ownership	Focussed involvement
Decision making	Quality evidence and data
Systems perspective	An emphasis on interrelated processes
Mission and objectives	An emphasis on student learning outcomes
Learning	Continuous improvement based on experience
Future orientation	Strategic management and scenario planning
Monitoring and assurance	Tracking progress and assuring outcomes

Figure 6: Dimensions and Characteristics of a Quality System for Schools

Neuroth et al. (1992) produced a handbook that examined the applicability of the Baldridge Criteria to schools. Neuroth et al. (1992) asserted that TQM consists of three basic principles: systems thinking, following Senge (1990); management by data; and continuous learning. Neuroth et al. (1992) promoted the idea that schools or systems interested in implementing a TQM approach to management ought to complete a self-assessment prior to beginning the journey of transformation. Producing such an inventory would sensibly and comprehensively guide the process, as the Baldridge Criteria, shown in Figure 5, describe the behaviours that exist in any organisation that accomplishes quality results. Knowing the starting points would prove of considerable benefit, and is consistent with point below, relating to relying on

factual information, followed by analysis. These behaviours are listed in the following categories:

1. leadership;
2. information and analysis;
3. strategic quality planning;
4. human resource development;
5. management of process quality; quality and operational results; and
6. customer focus and satisfaction. (Adapted from Arcaro, 1995, p. 8)

Wright (1995) undertook some action research on creating a quality classroom and produced a list of eight tips for those seeking to follow:

1. start small. Fullan (1988) would perhaps encourage the adding of "think big" (p. 25);
2. give yourself time, reinforcing Holt's (1993) assertion that change is a slow process;
3. maintain a journal of progress, particularly successes and struggles;
4. identify a critical friend in whom you could confide, stressing the team approach;
5. read, to continue to inform the change process;
6. identify training opportunities, reinforcing Deming's Points 13 (institute a vigorous program of education and training);

7. Involve students in decision making, in line with Glasser (1992 and 1993); and
8. maintain constant dialogue with parents, including training programs.

Schmoker and Wilson (1993) presented some of the preliminary results from a major study that they had undertaken which suggested that successful schools were knowingly, or indeed unknowingly, applying Deming's major principles. The following characteristics were cited as examples of the degree of correlation between Deming's principles of quality management and a successful school.

> ...a democratic atmosphere, supportive leadership, team and collaborative effort, a clear and unified purpose, and an insistence on regular analysis and evaluation of student performance data as a basis for continually improving on best practice to serve the school's customers (p. 391).

This study by Schmoker and Wilson (1993) also explored, and reported favourably upon, schools and industries in the same local area making the transition to Deming's philosophy in concert. In this way, Schmoker and Wilson (1993) expressed the "...hope that industry and the schools can help each other avoid some pitfalls and can learn from each other's experience" (p. 395).

Other researchers, Blankstein and Swain (1994), posed the question, is TQM right for schools? Their research examined eight reasons why TQM could not succeed in education, and showed one primary school that surmounted the obstacles in implementing Deming's quality principles. The school managed to overcome resistance to change, leadership misconceptions, reliance on external motivators (promotions and grades), increased training costs, emotion-driven decision-making, restrictive state mandates, and mechanically applied TQM principles. The researchers reinforced the fact that quality education is not created through the arbitrary application of mechanical methodologies, which is in line with Bishop and Mulford (1999). Rather, it is the capacity to internalise the deeply ingrained philosophical underpinnings of Deming's quality principles that is at the core of effective transformation to quality. Then, and only then, may the essential cultural developments take place.

Edwards and Algozzine (1995) described a research project where a massive cultural transformation occurred at two North Carolina elementary schools that had utilised Deming's principles as a catalyst for restructuring their curricula. The result, as claimed by the authors and as described in the article, was a well-coordinated thematic curriculum with problem solving capability, while engaging students actively in the learning process.

The two schools involved in the project identified their goals as "...improving student achievement, increasing parental involvement, and reducing confusing or conflicting duplication of services to families" (p. 38). In order to guide the development, the schools adapted Deming's action cycle (see Figure 2, p. 54) and called the program FADE, which stood for *Focus, Analyse, Develop and Execute*. This proved a successful adaptation of Deming's fundamental philosophy to solve a particular problem facing the two schools.

Back into the Australian scene, Dunn and Bale (1994) described their role in establishing what they referred to a 'quality school' from inception. Dunn and Bale described how the school, from Sydney's south-west near Liverpool, was established from new with quality management practices at its very core. This successful development commenced with the attendance of 20% of the teaching staff at a three day training course run by the Australian Quality College, so the school's commitment to staff training was clearly evident from the start. Several of Deming's Fourteen Points acknowledged already, and following Juran (1988) the quality implementation team was established.

Dunn and Bale (1994) reported that the choice to adopt a quality management option, sourced from Deming's management theory, was taken because it "...

captured the elements that we consider vital to create a quality school" (p. 1). Further, the authors indicated that the system adopted provided the school's leaders with: a framework encompassing all aspects of leadership; a philosophy of shared leadership; a focus for decision making; a strategy to ensure relevant priority setting; a way of viewing staff, students and children; and a means by which leadership practices may be monitored (Adopted from Dunn and Bale, 1994, p. 1-2). It had also provided a clear focus for regular staff development sessions, which were focused on six main themes: adopt the new philosophy, customer focus; direct attention to processes; use of tools and data; work continuously on process improvement; and classroom improvement.

Towns (1996) set out to produce a summary "... to play the perceived similarities between [Deming and John Dewey] for all they were worth. As Towns (1996) pondered, "what, after all, [would] W. Edwards Deming, a 'management consultant', have in common with the most prolific American author of educational philosophy?" (p. 73).

However, after a thorough interrogation of the similarities, misinterpretations, and misconceptions common to Deming and Dewey, Towns concluded, with considerable surprise, that they were very "... similar in general outlook and in

the shared belief in the integrity of the individual within the social system" (p. 84). Other similarities, according to Towns (1996), included:

- their "... shared belief in allowing intrinsic motivation, ignited by interest, to fuel a student's education" (p. 75), with a consequent abhorrence for rewards and punishments;
- Dewey believed that education should be instrumental in social reconstruction, while "... Deming's fundamental vision includes transforming the organisation into one which can successfully initiate and sustain a long term quest for quality' (p. 76);
- both wanted workers to become experts in their field, with autonomy;
- they were both fundamentally optimistic, holding the view that "... have the tools, intelligence, and where-with-all to change, reconstruct and transform society" (p. 83); and
- Dewey and Deming were each committed to education as a means by which society may advance.

Schneider et al. (1993) undertook research into what they believed characterised high quality schools. In summary, the researchers promoted the view that the following would suffice"... making good decisions, greater worker involvement in decision making, and a focus on the system rather than on individuals" (p. 86). Schneider et al. proceeded to detail eleven

organisational principles for education, as follows, which are extremely congruent with Deming's Fourteen Points:

1. shared understanding about achievable outcomes;
2. provided conditions are right, all students can achieve;
3. use and knowledge about daily statistical assessment;
4. level of teacher involvement in decisions that affect them;
5. identification and remediation of barriers to learning;
6. amount of on-the-job training;
7. evaluations focused on programs not individuals;
8. high levels of fearless, two-way communication;
9. team problem solving prevalence;
10. constructive use of numbers, with mandates and goals eliminated; and
11. the degree of involvement of everyone in the change process.

Davis (1994) reported on a research project that engaged 38 teachers in the completion of the Illinois Quality Schools Index Survey. This survey was intended to measure teachers' attitudes towards characteristics of quality schools. The study called on participants to rate the importance of the following quality schooling characteristics: leadership; mission; expectations; time on task; monitoring; basic skills; climate; and parent/community participation. The more specific nature of the results will be discussed in

Chapter 6. However, in general, Davis (1994) summarised the general findings in this way:

> The translation of industrial quality principles into educational practice shows great promise for improving the quality of education in this country [USA]. The basic concepts of customer satisfaction and continuous improvement are easily transferable (p. 11).

Alternative Views

While it is true that all the above writers and researchers have presented a most positive picture of the potential for quality management processes to positively impact upon school leadership practices, it is equally true that, predictably, there also exists a fair share of those who would not subscribe to that view. While acknowledging the existence of such a group, it is not proposed to examine in detail the reasons for their disapproval. Indeed, it may be that, as Davis (1996) asserted, "many in the movement who profess to hold [Deming's] Fourteen Points up to be a manifesto of sorts have put an emphasis on the tools of [TQM] to the neglect, perhaps, of some of the other more fundamental of his assertions" (p. 75). It may also be true that those skeptical of the potential of TQM management practices in schools may hold an incomplete comprehension of what TQM actually means as a theoretical construct. After all, as Deming (1998) has asserted, the transformation requires an holistic understanding and approach.

Regardless of the reasons for the opposition, this study is, in a relatively open manner, examining the degree to which TQM practices, specifically presented as Deming's Fourteen Points, have applicability in the school sector. Hypotheses have been presented in a null context to avoid claims of bias. The degree of apparent applicability of TQM theories to schools, as evidenced by this study, will be discussed in Chapters 5 and 6.

Summary

In summary, there have been many quality management models developed for, and recommended to, schools for implementation. As is apparent from the preceding discussion, some of these have evolved from Deming's management theories, while others have not. However, it remains clear that Deming's Fourteen Points provide an ideal platform from which to develop a quality management model for primary schools. It has certainly been the focus for the development of management theories specifically for application within schools by writers such as West-Burnham (1992), Tribus (1992), Murgatroyd and Morgan (1993), Glasser (1993), and Barlosky and Lawton (1994).

Deming's Fourteen Points for Implementation of TQM

On quality management, Deming is quite emphatic. He asserted (1998, p. 92-93) that:

> The first step is transformation of the individual. This transformation is discontinuous. It comes from an understanding of the system of profound knowledge. The individual, transformed, will perceive new meaning to his life, to events, to numbers, to interactions between people. Once the individual understands the system of profound knowledge, he will apply its principles in every kind of relationship with other people. He will have a basis for judgement of his own decisions and for transformation of the organisations that he belongs to. The individual, once transformed, will:
>
> Set a good example
> Be a good listener, but will not compromise
> Continually teach other people
> Help people to pull away from their current practice and beliefs and move into the new philosophy without a feeling of guilt about the past.

Deming continued by detailing the four parts of the system of profound knowledge as being:

- Appreciation for a system;
- Knowledge about variation;
- Theory of knowledge; and
- Psychology.

Deming (1998) then pointed out that "the 14 Points for management in industry, education and government follow naturally as application of this

outside knowledge, for transformation from the present style of Western management to one of optimization" (p. 93).

Deming's Fourteen Points are detailed as follows.

1. Create constancy of purpose toward improvement of production and service, with the aim to become competitive and stay in business, and to provide jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.

7. Institute leadership. The aim of supervision should be to help people and machines and gadgets do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.
8. Drive out fear, so that everyone may work effectively for the company.
9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may encountered with the product or service.
10. Eliminate slogans, exhortations, and targets for the workforce asking for zero defects and new levels of productivity. Such exhortations only-create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system, and thus lie beyond the power of the work force.
11. a) Eliminate work standards (quotas) on the factory floor. Substitute leadership.

11. b) Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.

12. a) Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.

12. b) Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual merit rating and management by objective.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

Applicability of Deming's Fourteen Points to Schools

Some of the literature on quality management in schools and TQM has included discussion about what Deming's Fourteen Points may mean in the school context and how they may be applied.

Bonstingl (1992), Mulligan, (1992), Paine et al. (1992), Holt (1993), and Barlosky and Lawton (1994) presented specific lists relating Deming's Fourteen Points to the school circumstance. Bonstingl's (1992) list was adopted by Holmes and others (1993) for their research which included the development of a survey instrument on South Dakota's School District Leadership Climate as related to Deming's Fourteen Points.

Another interesting list was developed by the students of Mt. Edgecumbe High School from Sitka in Alaska, and was cited by Lockwood (1992, p. 7). This list was particularly pertinent as it represented the expressed view of the students, a perspective somewhat different from the adult, expert or researcher view. Some of this discussion, and some of the points of view of the other writers, is outlined under each of Deming's Fourteen Points below.

1. *Create constancy of purpose* toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.

Barlosky and Lawton (1994) claimed that, in the educational context, this point meant that learning for all students ought to be made more relevant to their lives, both in school and beyond, while Bonstingl (1992) focused on the need to maximise pupils' potentials through continuous improvement in hoe teachers and students work together.

Mulligan (1992) indicated that this point would mean that all resources ought to be aimed at assisting students learn, with waste identified and eliminated.

Paine et al. (1992) saw it a little more literally in the drive for improvement in student, staff and school services, while the students of Mt Edgecumbe High School stressed the need to help students to enter meaningful positions in society (Lockwood, 1992).

Essentially, then, schools should create a constancy of purpose towards continuous improvement in the quality of teaching and learning in the school. In particular, focus on maximising opportunities for children to attain their full potential, with resultant enhancements to childrens' capacities to engage actively and successfully in society, exhibiting advanced personal skills. This point emphasises the need to develop a clearly articulated understanding of shared vision, mission statement, goals and values, after consultation with all stakeholders (staff, children and parents). The challenge is to do it in such a way that children can share the vision.

2. *Adopt the new philosophy.* We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.

Mulligan (1992) suggested that this meant that teachers had to accept that each child is capable of learning at high levels. Barlosky and Lawton (1994) expressed a similar view, adding that it is imperative for teachers to build on students' strengths, with the ultimate aim of supporting lifelong learning.

Paine (1992) chose to emphasise the responsibility of educational management to take a leading role in the quality movement, and Bonstingl (1992) alluded to the requirement of supporting continuous improvement through greater empowerment of teacher-student teams.

Mt Edgecumbe's students reminded administrators of their responsibilities in relation to providing leadership for change (Lockwood, 1992).

In the school's context, this point reminded teachers and school leaders to literally adopt the new philosophy. Schools must accept a significant share of the responsibility to educate society to the needs of the future. Australians of the future can no longer accept high levels of delays, mistakes or defective materials or workmanship, whether at school or at work. School experience models 'life in the real world' for the children, hence the need to focus on quality.

3. *Cease dependence on inspection* to achieve quality. Eliminate dependence for inspection on a mass basis by building quality into the product in the first place.

Holt (1993) alluded to the issue of testing in schools, and stated that (p. 387), "in a Deming-oriented school, formal assessment would be regarded as a necessary evil and only the minimum required to satisfy the school's constituency would be offered". In this context, it could be argued that there are not many 'Deming-oriented schools'. Paine et al. (1992) agreed, acknowledging that testing and inspection strategies have some place, but warned that schools should not depend too heavily on them. Instead, students need to strive for quality themselves. Mt Edgecumbe students went even further. They recommended to abolish grading and harmful effects of rating people (Lockwood, 1992).

According to Mulligan (1992, p. 2), "assessment occurs on a daily basis", a view supported by Balosvky and Lawton (1994), who advised teachers to (p. 7) "use process-oriented evaluation to enhance rather that to interrupt learning". Bonstingl (1992) concurred, in claiming that it was too late to assess student's work at the conclusion of the work. Rather, Bonstingl asserted, any necessary testing ought to be diagnostic and administered throughout the learning process.

This point also means that schools should cease inspectorial checking of such aspects as a teacher's professional preparation. Instead, require evidence that confirms quality learning and teaching processes in the school, thereby eliminating the need for inspection. Build in quality in the first place.

4. *End the practice of awarding* business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.

In relation to this point, Paine et al. (1992) promoted the need for schools to work closely with their suppliers: secondary schools with their feeder primary schools and parents to improve the quality of students entering the school; and primary schools working closely with parents and pre-schools. Bonstingl (1992) also stressed the issue of supplier and customer in relation to everyone's roles.

Mulligan (1992) took the point more literally, indicating that facilities, textbooks, technologies, and other resources are constantly evaluated to ensure their suitability.

Mt Edgecumbe's students promoted the provision of quality learning experiences which, they claimed, create quality performance, ignoring the issue of 'price tag' altogether.

In summary, school personnel should work hard over the long term to establish, nurture and develop harmonious relationships with the local community, as well as a major focus on teacher/student relationships. This means giving attention to such things as building loyalty and trust at parent-child sessions and developing efficient and friendly school admission processes. Cost savings in terms of improved perceptions of, and support for, the school and its operation would be likely to be significant. It also means searching constantly to minimize total cost, not necessarily buying the cheapest equipment and teaching and learning materials. Creating ongoing

relationships with suppliers of goods and services would prove as beneficial to schools as it does to business. The school ought to create ongoing relationships with its parents and see them as long-term customers.

5. *Improve constantly and forever the system of production and service*, to improve quality and productivity, and thus constantly decrease costs.

Following Paine, (1992), improve constantly and forever the teaching and learning processes in the school (and all the other supporting processes such as teaching, administration, planning, budgeting, etc.), with the aim of effecting enhancements to student outcomes. Furthermore, Barlosky and Lawton (1994) indicated the importance of "...observing what is productive for students and monitoring which processes encourage students to excel" (p. 8). Mulligan (1992) highlighted the need to seek continuously to upgrade school programs and services.

Bonstingl (1992) saw the need for school administrators to promote an environment that is conducive to empowering teachers to learn and progress themselves, in a continuous context.

6. *Institute training on the job.*

Institute modern methods of training and development for teachers, students, their parents, administrators and other staff. These methods, following Barlosky and Lawton (1994), should emphasise collaborative strategies aimed at achieving shared purposes and goals. Training processes ought to address issues that actually deal with aspects of the life and work of the school, and as

asserted by Mulligan (1992), must cater for the managerial, technical and professional needs of all personnel.

Bonstingl (1992) alluded to the need for training programs to link directly to the specific culture and expectations of the school, while Mt Edgecumbe's students referred to the need to focus on the system as it relates to student improvement.

7. *Institute leadership.* The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.

Paine (1992) provided advice to both principals and teachers in regard to their particular responsibilities: the principal to nurture and lead staff and students in seeking to improve their performance; and teachers to adopt a leadership rather than supervisory role with students. In contrast, Barlosky and Lawton (1994) focused on the need to establish self-directing teams to achieve learning objectives.

Bonstingl (1992) provided a reminder that the school leadership consists of working with teachers, parents, students, and members of the community.

In summary, instituting leadership means helping all learners, including staff, do a better job through improving management and operational processes and systems within the school. Quality school leadership is the key to improvements to teaching and learning.

8. *Drive out fear,* so that everyone may work effectively for the company.

Block (1993) provided strong, inciteful support for this contention when he asserted that (p. 237) "implementing changes of our own design is learning; acting on the designs of others is too often a form of staying stuck". School leaders need to drive out fear from all situations within the life and work of the school, allowing everyone to work effectively within the school system for the common good. Teachers must take up the challenge to contribute.

Barlosky and Lawton (1994) advised schools to eliminate fear of failure, reprisals, ridicule and embarrassment among staff and students. Staff and students must feel free to suggest improvements and point out problems, suggested Paine et al. (1992), or 'speak freely' as Mt Edgecumbe's students put it (Lockwood, 1992), and Mulligan (1992) provided a salient reminder of the danger to self image should this point be ignored.

Furthermore, Bonstingl (1992) stated that fear is counterproductive and destructive of school culture.

9. *Break down barriers between departments.* People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.

Break down organizational barriers within the school which interfere with learning processes and thus inhibit successful teaching outcomes. Paine et al. (1992) alluded to the barriers between subject departments and different staff, while Barlosky and Lawton (1994) focused on encouraging an integrated approach to the curriculum, and, at the same time, encouraging students to learn cooperatively and in teams. Leaders must also ensure that administrators, students, teachers, student support personnel, curriculum

officers etc. co-operate and team together to enhance problem prevention and problem solving capabilities, a point also agreed to by Mt Edgecumbe's students (Lockwood, 1992).

10. *Eliminate slogans,* exhortations and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.

Paine et al. (1992), suggested replacing such strategies with targets of continuous self and group improvement. School personnel must eliminate arbitrary numerical goals, slogans and exhortations for teachers and children seeking perfection in performance. Such actions adversely affect the quality of personal relationships. Instead, focus on improvements to methodologies that are within the capacity of teachers and students to develop and enhance. These views were supported by Bonstingl (1992), and Lockwood (1992).

11. (a) *Eliminate work standards* (quotas) on the factory floor. Substitute leadership. (b) *Eliminate management by objective.* Eliminate management by numbers, numerical goals. Substitute leadership.

Barlosky and Lawton (1994) advised the instilling of curiosity rather than setting some performance limits, albeit acceptable ones. Instead, Mulligan (1992) advised an overall focus on individual student progress, a suggestion to substitute leadership for such quota setting, and to direct improvement expectations on individuals and the processes they use.

Mt Edgecumbe's students provided a reminder that work quotas ought to be eliminated from both teachers and students, whilst Bonstingl (1992) warned that short term gains may replace student (and teacher) investment in life long learning.

12. (a) *Remove barriers* that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality. (b) Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual or merit rating of management by objective.

Bonstingl (1992) advised the removal of barriers that rob staff and students of their pride in performance and workmanship. Furthermore, he asserted that teachers and students generally want to do good work in which they can be proud. Barlosky and Lawton (1994) referred to aspects such as the need to remove constraints and encourage the development of pride in achievements amongst staff and students, while the Mt Edgecumbe students added management and administrative staff to the list. Mulligan (1992) contended that two-way communication is a key strategy to achieve this objective.

13. *Institute a vigorous program* of education and self-improvement.

Institute a vigorous program of education and training for everyone. This means appraisal systems aimed at personal empowerment and development instead of externally imposed merit ratings. It also means, following Barlosky and Lawton (1994), that all school personnel must become co-learners in

pursuit of "...intellectual vibrancy, personal growth and ... system improvement" (p. 9).

Paine et al. (1992) advised that all schools have a responsibility to ensure the provision of a quality program of education and self-improvement for everyone by, following Bonstingl (1992), "...exploring ideas and interests beyond the boundaries of their professional and personal worlds" (p. 82).

14. *Put everybody in the company to work* to accomplish the transformation. The transformation is everybody's job.

Paine et al. (1992), Barlosky and Lawton (1994) and Mulligan (1992, agreed that structures and processes within the school system must be established which ensure that everyone becomes actively involved in the transformation. Continuous improvement is everyone's responsibility, and in the school's context, this means the principal, teachers, support staff, administrators, students, parents and community partners. The ultimate goal is, as Bonstingl (1992) asserted, not accomplished until it "becomes embedded into the deep structure and culture of the school" (p. 82).

TQM in Schools - Development of the Schools and Total Quality Management [SATQM] Questionnaire

The school contexts described in the previous section were taken into account in relation to the applicability of Deming's Fourteen Points for quality management. From these descriptions, the draft SATQM questionnaire was developed, tested and refined. Actual methodologies are outlined in Chapter

3, and the final SATQM survey instrument that was administered to inform the study is included as Appendix H.

Another questionnaire was developed specifically for schools from Deming's Fourteen Points. The process by which this measurement tool was developed in 1993 for a study by Holmes and others (1993) was outlined in a paper presented to the Annual Meeting of the Northern Rocky Mountain Educational Research Association from September 30th to October 2nd, 1993. Some comparisons between the findings from that study and this one using the SATQM document will be drawn in Chapter 6.

School Effectiveness - School Level Environment Questionnaire (SLEQ)

The SLEQ survey instrument was selected as a validatory tool for SATQM, and the methodology by which it was administered is described in Chapter 3.

Background and development

The School Level Environment Questionnaire [SLEQ] was developed by Fisher and Fraser (1991) as part of a study of changes in beginning teachers' attitudes towards individualised teaching strategies during the first year of teaching. The SLEQ was designed to measure teachers' perceptions of eight psychosocial dimensions of the primary or secondary school environments. The SLEQ was a development of an earlier instrument, the WES, which was initially developed by Moos (1974). It was the intention of this instrument to show relationships between school climate and school effectiveness.

The SLEQ consisted of 56 items, each scored on a five-point scale, and grouped in eight scales which represented the eight psychosocial dimensions, as follows: (1) student support; (2) affiliation; (3) professional interest; (4)

staff freedom; (5) participatory decision making; (6) innovation; (7) resource adequacy; and (8) work pressure. The first two scales were, according to Moos (1974), 'relationship' dimensions, the third was the 'personal development' dimension (Moos, 1974), and the last five were measuring the 'system maintenance and system change' dimension (Moos, 1974).

Findings

Rentoul and Fraser (1983) reported that administration of the SLEQ revealed that each seven-item scale displayed satisfactory internal consistency and discriminant validity results, suggesting that distinct, but somewhat overlapping aspects of school environment were measured.

Relevance as SATQM Validation

SLEQ has been used extensively as an instrument to determine differences in the climates of primary and secondary schools within Tasmania as well as in other Australian states. It has also been used in order to evaluate teacher's efforts to improve their school environments. These elements are impacted upon significantly by managerial processes within a school, so the SLEQ is a suitable instrument to utilise as a validatory tool for the SATQM survey instrument, which was developed specifically for this study. The SLEQ survey instrument, together with instructions for use, is found as Appendix D.

Contribution of this Study

This study will augment the literature in that it will detail the degree to which Tasmanian primary schools are applying the management principles of TQM.

CHAPTER 3

RESEARCH METHOD

Research Design

This study uses both ex post facto research design and a closely alligned correlational research design to:

1. examine the relationships between a number of variables, such as major role in school, years taught and gender, and the results from the Schools and Total Quality Management survey instrument; and
2. the possible concurrent validity between the Schools and Total Quality Management survey instrument and the School Level Environment Questionnaire.

This chapter outlines the strengths and weaknesses of ex post facto research, information about gaining permission to conduct the study, population sample, methodology in relation to research instruments and measurement tools, design of the instruments, administration of research instruments, follow-up study, data analysis, validity and reliability, factor analyses, and concurrent validity.

Ex Post Facto Research

Using ex post facto research methodology, a variable can be studied after it has indicated a possible effect on another variable. Therefore, ex post facto research design is particularly appropriate for examining correlated or linked relationships. This strategy has been used in this study because it is sometimes a better model when an experiential approach is not possible. Using the ex post facto research method for this particular study has facilitated an improvement in statistical technique (Gall et al, 1994, p. 380).

However, according to Cohen (1989), there are weaknesses in the ex post facto approach. These weaknesses include:

1. a lack of control over independent variables;
2. an uncertainty about whether the related factors have been included; and
3. a particular outcome may result from different causes on different occasions.

Despite these possible weaknesses, it was decided that an ex post facto research method was the most appropriate for this study.

Gaining Permission To Conduct The Study

Permission was sought from, and granted by, the University of Tasmania's Ethics Committee for the implementation of this study. All appropriate procedures have been adopted and rules applied.

The Deputy-Secretary (Education) of the Department of Education provided written confirmation that the study could be conducted within government schools in Tasmania, subject to the agreement of school principals. This letter is included as Appendix A.

Individual principals of relevant schools were contacted by telephone in order to seek personal permission to involve some of their teachers in the study. If there was fundamental agreement, a follow-up letter was sent, together with basic instructions. The sample letter to principals is included as Appendix B.

Population/sample

Population

The target population for the study consisted of teachers and principals in government primary schools in Tasmania. This target population consisted of 141 primary schools with a total of 2,402 teachers and 141 principals.

Sample

The basic unit of analysis was the teacher. The sample of teachers was drawn from a stratified sample of 19 schools, which was drawn from a total population of 141 Tasmanian government primary schools. Of the 19 schools invited to participate, 18 did participate. Of the 196 packages distributed, 146 teachers and principals responded by completing, and returning, both survey instruments and the demographic information, as requested, which constituted a return rate of 75%.

Schools were considered for possible involvement in the study according to a variety of differentiating characteristics as follows:

- *geographic location.* A variety of community types was required, ranging from small isolated communities, through small rural and larger regional centres, and on to major cities and their suburbs;
- *geographic distribution.* Decisions about the sample were made in order to ensure extensive statewide coverage of schools, as evidenced by all six school districts being represented;
- *socio-economic status.* As wide a variety of school types as possible was required and selected; and
- *size.* This criterion was adopted to ensure that schools of all departmental categories had representation, ranging from Level 1 (fewer than 100 students) to Level 6 (up to 800 students).

Once the stratified sample of schools had been identified, principals of these schools were contacted in order to seek permission to involve teachers from their schools in the study. Those who consented to participate were provided with specific instructions to guide their identification of teachers to be involved in the study. Essentially, principals were requested to make their selections according to the following criteria:

- *teaching experience.* The study required participants to reflect a variety of ages, years of teaching (total teaching experience, and at their current school), and overall number of teaching locations;
- *gender.* A representative mix of male and female teachers was to be ensured; and
- *level of teaching expertise.* It was necessary to have a variety of respondents with primary, early childhood and specialist capabilities, as well as senior staff. The principal was eligible to be a participant.

Methodology/research instruments/measurement tools

Two instruments were used as data gathering tools for the study.

1. SATQM (Schools and Total Quality Management). This is an instrument designed specifically by the researcher for this study to measure the characteristics of Deming's Fourteen Points for the implementation of Total Quality Management in schools; and
2. SLEQ (School Level Environment Questionnaire). This is an instrument to measure school learning environments. The School Level Environment Questionnaire [SLEQ] was developed initially by Fisher and Fraser (1991) as part of a study into the effects of school level environment on learning outcomes for students and has been shown to have validity. This

instrument was used as a cross-validation tool for the SATQM questionnaire.

Design Of The Instruments

SATQM (Schools and Total Quality Management)

The draft instrument, consisting of 56 questions structured as Likert Scales, was developed by the researcher to examine each of Deming's Fourteen Points for implementation of his model for Total Quality Management (Deming 1998).

Four questions for each of Deming's Fourteen Points for implementation were designed to seek information regarding the management of a primary school.

Determining content validity of the SATQM instrument..

According to Gay, (1996, p. 139), "content validity is the degree to which a test measures an intended content area". Furthermore, Gay (1996, p. 140) asserted that "content validity is determined by expert judgement ... [and that] ... usually experts in the area covered by the test are asked to assess content validity".

The draft version of the SATQM instrument was submitted to a small panel of experts in order to determine content validity of the instrument.

The panel consisted of the following:

- a local primary school principal;
- a principal of a non-government secondary school in Victoria;
- a vice principal of a large government secondary school in Victoria;
- a professor of Education in Australia;
- a teacher educator who is an internationally acclaimed academic in England; and
- an executive of an Australian telecommunications provider.

The reasons for the selection of these panelists were:

- *a local primary school principal.* He had spent several years of personal study examining the potential of TQM to inform school management practices. He had been a keynote speaker and presenter at an Australian Quality Council National Conference, and his school was the first such institution to become a full member of the Australian Quality Council. This principal was well known nationally and locally for his particular knowledge and expertise, and had conducted several interstate workshops on TQM for principals and other school leaders;

- *a principal of a non-government secondary school in Victoria.* He had participated in international study tours which examined the issue of TQM in schools, and who had been implementing elements of his learnings into his school's fundamental operation for several years. Additionally, he had lectured quite extensively on his findings;
- *a vice principal of a large government secondary school in Victoria.* His experiences and influences were quite unique as his current working responsibilities extended to three separate campuses;
- *a professor of education in Australia*, who had expertise in the field of TQM in education. He had initiated, and overseen further development of post-graduate courses where the specific focus was on TQM and schools. He had been a regular keynote speaker in this area of management at state and national conferences, and had written prodigiously on the topic;
- *a teacher educator in England* who was an internationally acclaimed academic and who had a research background concerning schools and TQM. He had lectured extensively in Australia and other countries and his writings on the topic had been recognised universally as some of the defining examples of the strategy;
- *an executive of an Australian telecommunications provider*, who had a significant responsibility in that company's implementation of TQM practices during the early 1990's. He had also acted as a consultant for the

Australian Quality Council, where part of his brief was to communicate the positive attributes of TQM for the school sector.

Following individual analyses, the panel of experts provided responses to the questionnaire and advice for future consideration.

Trialling the questionnaire.

One school, outside the study, was selected to trial the instrument. Several questions from the SATQM questionnaire were modified in response to feedback received from participants in this trial.

Questionnaire Items

SATQM (Schools and Total Quality Management).

The modified instrument, consisting of 56 questions structured as Likert Scales, was developed to examine each of Deming's Fourteen Points for implementation of his model for Total Quality Management (Deming 1998).

Four questions for each of Deming's Fourteen points for implementation of quality management practices were designed to seek information regarding the management of a primary school. The items found in Appendix C were selected to be administered to the respondents in the schools.

Determining Concurrent Validity of the SATQM Instrument Using SLEQ

The School Level Environment Questionnaire (SLEQ) was selected for use in this study to measure concurrent validity.

According to Gall et al (1996, p. 252), "concurrent validity can be defined as the extent to which individuals' scores on a new test correspond to their scores on an established test of [similar] construct that is administered shortly before or after the new test".

SLEQ (Schools Learning Environment Questionnaire).

This instrument, consisting of 56 items, is an instrument to measure eight constructs in relation to school level learning environments. It was developed by Fraser and Fisher (1991) as part of a study into the effects of school level environment on learning outcomes for students. The SLEQ instrument is found in Appendix D, whilst the SLEQ subscales are shown in Appendix E.

Administration of Research Instruments (SATQM, SLEQ)

Initial Negotiation

Personal contact was made with the principal of each school in the sample in order to negotiate the specific nature of the administrative structures to be

implemented at each workplace. A fundamental issue related to the protection of the integrity of the data and the process.

Discussion during these early contacts with principals centred on the following issues:

- a letter of introduction and instruction for the principal, which is included as Appendix C;
- the number of kits of survey instruments and instructional materials to be distributed to staff, subject to the criteria developed for the study;
- when the kits ought to be distributed;
- deadline for return of the completed survey instruments; and
- method of collection of completed survey instruments.

Follow-up Visit with Materials

In most instances, a follow-up meant a personal visit to the school to distribute the agreed number of research kits. Each individual kit was packaged in its own envelope, and contained the following:

- a letter of introduction to participants. This letter also detailed any necessary instructions. This letter as included as Appendix F;
- a personal data form for completion of demographic information This is included as Appendix G;

- the SATQM questionnaire, together with instructions for its completion. This is included as Appendix H;
- the SLEQ questionnaire, together with instructions for its completion. This is included as Appendix E; and
- a prepaid, addressed envelope for return of the completed questionnaires.

Scoring the instruments

Both SATQM and SLEQ were scored with a value of one (1) for responses of "strongly disagree" through to five (5) for responses of "strongly agree". Reversed items were scored in the opposite manner.

Follow-up Study

A follow-up study was undertaken some time after the gathering of the initial data. This was done for several reasons.

Firstly, the school chosen for the follow-up study had, for some years, been implementing some of the principles of Total Quality Management in its overall management structure. By instituting the follow-up study, it would be possible to ascertain the degree to which these developments had affected the school's fundamental operation, in relation to Deming's Fourteen Points. Additionally, it could be gauged whether such a focus over a period of time

had appeared to have had a measurable effect on the staff's perceptions of the school's operation.

Secondly, the school was quite large in the context of the study, so it added quite significantly to the overall size of the database that was developed for analytical purposes.

Thirdly, subject to the nature of the analysis, the time differential may provide further correlational validity to the SATQM instrument, and hence, the study. Results of the follow-up study are shown as Appendix J.

Data Analysis

Factor Analysis of SATQM

Subscales of the questionnaire representing Deming's Fourteen Points were factor analysed to provide evidence that the content validity provided by the panel of experts in trialling the questionnaire was sound.

All subscales displayed an eigen value of greater than 1.0. Items were selected to be included in the factor on the basis of their factor loadings. Those items which did not load at greater than 0.30 were not included in the subscales of the SATQM analysis. The following listing of subscales and items with factor loadings illustrate the results of the factor analysis.

Table 1

Summary of items that factored with Deming's Fourteen Points

Deming's Point	Item			
1. Constancy of purpose	1	15	29	43
2. Adopt the new philosophy	2	16	30	44
3. Senior staff supervision	3		31	
4. Cost minimization	4	18	32	46
5. Production and service	5	19		47
6. On-the-job training	6	20	34	48
7. Leadership	7	21	35	49
8. Personal empowerment	8		36	50
9. Teamwork	9	23	37	51
10. Artificial goals	10	24	38	52
11. Standards	11	25	39	53
12. Recognition	12	26		54
13. Professional development	13	27	41	55
14. Responsibility for action	14	28	42	56

In order to maintain the conceptual integrity of the factors derived from the study, items that did not load above 0.3 were discarded. These SATQM items that did not load were: 17, 22, 33, 40 and 45.

Factor analysis of SLEQ

SLEQ questionnaire was selected as an instrument to be used together with SATQM because of the congruence of several of the subscales. The subscales of the questionnaire SLEQ were factor analysed to provide congruent validity for the SATQM questionnaire.

All subscales displayed an eigen value of greater than 1.0. Items were selected to be included in the factor on the basis of their factor loadings. Those items which did not load at greater than 0.30 were not included in the subscales of the SLEQ analysis.

The following listing of subscales and items with factor loadings illustrate the results of the factor analysis.

Table 2

Summary of Items that factored with SLEQ Constructs

SLEQ Construct	Item						
1. Student support			17	25	33	41	49
2. Affiliation			18	26	34	42	50
3. Professional interest	3	11	19	27	35	43	51
4. Staff freedom				28	36		
5. Participatory decision making	5		21			46	53
6. Innovation		14	22	30	38		54
7. Resource adequacy			23		39		55
8. Work pressure			24		40		56

In order to maintain the conceptual integrity of the factors derived from the study, items that did not load above 0.3 were discarded. The SLEQ items that did not load were: 1, 2, 4, 6, 7, 8, 9, 10, 12, 13, 15, 16, 20, 29, 31, 32, 37, 44, 45, 47, 48 and 52.

Validity and reliability

Concurrent validity

The subscales of SATQM and SLEQ were calculated using a computer program, SPSS Version 9.0, 1999. These subscales were used as items in a

factor analysis, the results of which are displayed below. SATQM results are summarised firstly in Tables 3 to 67 and these are followed by the SLEQ results in Tables 68 to 111.

SATQM (Schools and Total Quality Management) Questionnaire Results

Table 3

Factor Analysis of Deming's Point 1: Constancy of purpose

Item	Factor loading
(sat43) Constant commitment to future planning is a feature of the school.	.818
(sat1) Improvement is constantly sought in the school's operation.	.777
(sat15) I can explain the main intentions of the school.	.727
(sat29) Key stakeholders actively pursue what's regarded as being important in the school.	.441

Table 4

(SATQM Item 1) Improvement is constantly sought in the school's operation.

		Frequency	Valid Percent
Valid	disagree	2	1.4
	unsure	4	2.8
	agree	58	40.0
	strongly agree	81	55.9
Total		146	100.0

The majority of respondents (95.9%) agreed with SATQM item number one.

Table 5

(SATQM Item 15) I can explain the main intentions of the school.

		Frequency	Valid Percent
Valid	disagree	5	3.4
	unsure	6	4.1
	agree	98	67.1
	strongly agree	37	25.3
Total		146	100.0

Most respondents (92.3%) agreed with SATQM item 15.

Table 6

(SATQM Item 29) Key stakeholders actively pursue what's regarded as being important in the school.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	10	7.0
	unsure	35	24.5
	agree	77	53.8
	strongly agree	20	14.0
Total		146	100.0

In excess of two thirds of respondents agreed with SATQM item 29.

However, a further one person in four (24.5%) was unsure.

Table 7

(SATQM Item 43) Constant commitment to future planning is a feature of the school.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	3	2.1
	unsure	7	4.9
	agree	82	56.9
	strongly agree	51	35.4
Total		146	100.0

A large percentage of respondents (92.3%) agreed with SATQM item 43.

Table 8

Factor Analysis of Deming's Point 2: Adopting a new philosophy

Item	Factor loading
(sat30) The school has adopted a philosophy of continuous improvement.	.842
(sat2) The school demonstrates a clear commitment to continuous quality improvement.	.842
(sat44) Everyone in the school seeks constantly to improve their performance.	.672
(sat16) Change is regarded as an opportunity for improvement	.634

Table 9

(SATQM Item 2) The school demonstrates a clear commitment to continuous quality improvement.

		Frequency	Valid Percent
Valid	disagree	2	1.4
	unsure	5	3.4
	agree	63	43.2
	strongly agree	76	52.1
Total		146	100.0

Less than 5% (4.8%) failed to agree with this assertion.

Table 10

(SATQM Item 16) Change is regarded as an opportunity for improvement.

		Frequency	Valid Percent
Valid	disagree	8	5.5
	unsure	22	15.1
	agree	79	54.1
	strongly agree	37	25.3
Total		146	100.0

79.4% of respondents agreed with this question. However, one in five were either unsure or disagreed.

Table 11

(SATQM Item 30) The school has adopted a philosophy of continuous improvement.

		Frequency	Valid Percent
Valid	disagree	4	2.8
	unsure	10	6.9
	agree	81	55.9
	strongly agree	50	34.5
Total		146	100.0

In excess of 90% agreed with this question, while less than 3% disagreed.

Table 12

(SATQM Item 44) Everyone in the school seeks constantly to improve their performance.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	21	14.5
	unsure	31	21.4
	agree	73	50.3
	strongly agree	18	12.4
Total		146	100.0

There was quite a varied response to this question with almost two thirds (62.7%) agreeing. Almost one in six (15.9%) disagreed, while in excess of one fifth indicated that they were unsure.

Table 13

Factor Analysis of Deming's Point 3: Senior staff supervision

	Factor loading
(sat3) My planning is checked regularly by senior staff.	.885
(sat31) Senior staff frequently inspect my work.	.885

Table 14

(SATQM Item 3) My planning is checked regularly by senior staff.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	18	12.5
	unsure	22	15.3
	agree	49	34.0
	strongly agree	54	37.5
Total		146	100.0

A high 71% of respondents indicated that their work was checked regularly by senior staff. Strangely, 15.3% pointed out that they were unsure about whether their planning was checked.

Table 15

(SATQM Item 31) Senior staff frequently inspect my work.

		Percent	Valid Percent
Valid	strongly disagree	.7	.7
	disagree	12.3	12.5
	unsure	15.1	15.3
	agree	43.2	43.8
	strongly agree	27.4	27.8
Total		100.0	100.0

Again 71.6% responded to indicate that they agreed with this item.

Table 16

Factor Analysis of Deming's Point 4: Cost minimization

	Factor loading
(sat18) Price is the major factor when purchasing materials or services.	.798
(sat32) At this school, buying expensive items is thought to be less cost effective.	.752
(sat4) This school always purchases the lowest priced teaching materials.	.700
(sat46) Our school has established useful relationships with quality equipment suppliers.	.556

Table 17

(SATQM Item 4) This school always purchases the lowest priced teaching materials.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	8	5.6
	unsure	25	17.4
	agree	71	49.3
	strongly agree	39	27.1
Total		146	100.0

76.4% agreed with question four, while a relatively high percentage (17.4%) were not sure. This was not considered to be a surprising result, as many

teachers in primary schools would not need to have a detailed understanding of their school's administrative procedures.

Table 18

(SATQM Item 18) Price is the major factor when purchasing materials or services.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	13	8.9
	unsure	27	18.5
	agree	78	53.4
	strongly agree	26	17.8
Total		146	100.0

71.2% of respondents agreed with this SATQM item.

Table 19

(SATQM Item 32) At this school, buying expensive items is thought to be less cost effective.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	8	5.5
	unsure	53	36.6
	agree	73	50.3
	strongly agree	9	6.2
Total		146	100.0

A little over half (56.5%) agreed with this item, while in excess of one third (36.6%) were unsure. Only a small percentage (6.9%) disagreed.

Table 20

(SATQM Item 46) Our school has established useful relationships with quality equipment suppliers.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	6	4.1
	unsure	68	46.9
	agree	60	41.4
	strongly agree	10	6.9
Total		146	100.0

Less than half of the participants in the study (48.3%) agreed with this question, while an almost equal number (46.9%) were unsure.

Table 21

Factor Analysis of Deming's Point 5: Improvement: product and service

	Factor loading
(sat19) The school's operational processes are constantly monitored, with a view to effecting improvements.	.816
(sat47) The school is determined to improve evaluative procedures.	.779
(sat5) Effective evaluation is regarded as a key to improved performance.	.694

Table 22

(SATQM Item 5) Effective evaluation is regarded as a key to improved performance.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	6	4.1
	unsure	11	7.5
	agree	77	52.7
	strongly agree	50	34.2
Total		146	100.0

86.9% agreed with this item, while only 5.5% disagreed.

Table 23

(SATQM Item 19) The school's operational processes are constantly monitored, with a view to effecting improvements.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	7	4.8
	unsure	17	11.6
	agree	91	62.3
	strongly agree	30	20.5
Total		146	100.0

82.8% agreed with this question.

Table 24

(SATQM Item 47) The school is determined to improve evaluative procedures.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	7	4.8
	unsure	22	15.2
	agree	83	57.2
	strongly agree	32	22.1
Total		146	100.0

Whilst almost 80% of respondents agreed with this item which addressed the school's evaluative procedures, 15.2% were unsure.

Table 25

Factor Analysis of Deming's Point 6: On-the-job training

	Factor loading
(sat34) On the job training is regarded as an integral element to improving performance.	.821
(sat48) The school helps me to get better continuously at my job.	.752
(sat6) Professional development of staff is important in the school.	.611
(sat20) In this school, on the job training methods relate directly to the staff member's core tasks.	.436

Table 26

(SATQM Item 6) Professional development of staff is important in the school.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	3	2.1
	unsure	2	1.4
	agree	59	40.4
	strongly agree	81	55.5
Total		146	100.0

Almost all respondents (95.9%) agreed with this assertion.

Table 27

(SATQM Item 20) In this school, on the job training methods relate directly to the staff member's core tasks.

		Frequency	Valid Percent
Valid	disagree	20	13.8
	unsure	50	34.5
	agree	57	39.3
	strongly agree	18	12.4
Total		146	100.0

There was quite a mixed response to this item. Whilst more than half (51.7%) agreed, a high 34.5% were unsure, and a significant number (13.8%) disagreed.

Table 28

(SATQM Item 34) On the job training is regarded as an integral element to improving performance.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	6	4.1
	unsure	12	8.3
	agree	101	69.7
	strongly agree	24	16.6
Total		146	100.0

A high 86.3% agreed with this question.

Table 29

(SATQM Item 48) The school helps me to get better continuously at my job.

		Frequency	Valid Percent
Valid	disagree	12	8.3
	unsure	22	15.3
	agree	88	61.1
	strongly agree	22	15.3
Total		146	100.0

More that three quarters (76.4%) of the respondents agreed with this question, while a significant 15.3% were unsure.

Table 30

Factor Analysis of Deming's Point 7: Leadership

	Factor loading
(sat35) In this school, senior staff help others to do their jobs better.	.828
(sat49) If I need help, I can go confidently to a senior staff member.	.767
(sat21) Leadership strategies in this school are based on a supportive rather than directive culture.	.761
(sat7) The school's leaders are keen to help staff improve.	.625

Table 31

(SATQM Item 7) The school's leaders are keen to help staff improve.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	11	7.5
	unsure	25	17.1
	agree	78	53.4
	strongly agree	31	21.2
Total		146	100.0

One in six staff were unsure about whether their school's leaders are keen to assist other staff improve, but a large percentage (74.6%) agreed.

Table 32

(SATQM Item 21) Leadership strategies in this school are based on a supportive rather than directive culture.

		Frequency	Valid Percent
Valid	disagree	7	4.8
	unsure	15	10.3
	agree	58	39.7
	strongly agree	66	45.2
Total		146	100.0

84.9% of respondents agreed with this item. One in ten was unsure.

Table 33

(SATQM Item 35) In this school, senior staff help others to do their jobs better.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	10	6.8
	unsure	12	8.2
	agree	82	56.2
	strongly agree	40	27.4
Total		146	100.0

A high 86.3% agreed with this item.

Table 34

(SATQM Item 49) If I need help, I can go confidently to a senior staff member.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	12	8.3
	unsure	16	11.0
	agree	74	51.0
	strongly agree	42	29.0
Total		146	100.0

80% agreed, while one in nine respondents was unsure.

Table 35

Factor Analysis of Deming's Point 8: Personal empowerment

	Factor loading
(sat36) I feel empowered to identify opportunities for improvement.	.772
(sat50) Risk taking is admired in the school.	.763
(sat8) I'm never afraid to try new things at the school.	.508

Table 36

(SATQM Item 8) I'm never afraid to try new things at the school.

		Frequency	Valid Percent
Valid	disagree	7	4.8
	unsure	15	10.3
	agree	78	53.4
	strongly agree	46	31.5
Total		146	100.0

84.9% agreed with this item.

Table 37

(SATQM Item 36) I feel empowered to identify opportunities for improvement.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	9	6.2
	unsure	18	12.4
	agree	95	65.5
	strongly agree	22	15.2
Total		146	100.0

80.7% agreed with this question, while only 6.9% disagreed.

Table 38

(SATQM Item 50) Risk taking is admired in the school.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	6	4.1
	unsure	37	25.5
	agree	76	52.4
	strongly agree	24	16.6
Total		146	100.0

A significant one quarter of the respondents were unsure about this item, but 69% agreed.

Table 39

Factor Analysis of Deming's Point 9: Teamwork

	Factor loading
(sat9) Staff co-operate very well.	.768
(sat23) Staff sometimes compete for professional recognition.	.678
(sat37) Sharing tasks is a feature of this school's operation.	.613
(sat51) This school discourages organisational factors which may inhibit quality outcomes.	.525

Table 40

(SATQM Item 9) Staff co-operate very well.

		Frequency	Valid Percent
Valid	strongly disagree	8	5.5
	disagree	14	9.6
	unsure	25	17.1
	agree	63	43.2
	strongly agree	36	24.7
Total		146	100.0

One third of respondents (32.2%) were unsure or disagreed that staff co-operated well. This was considered a quite high percentage.

Table 41

(SATQM Item 23) Staff sometimes compete for professional recognition.

		Frequency	Valid Percent
Valid	strongly disagree	5	3.4
	disagree	26	17.8
	unsure	36	24.7
	agree	50	34.2
	strongly agree	29	19.9
Total		146	100.0

Almost one in four (24.7%) were unsure about staff competitiveness, while 54.1% of respondents agreed with the question.

Table 42

(SATQM Item 37) Sharing tasks is a feature of this school's operation.

		Frequency	Valid Percent
Valid	disagree	5	3.4
	unsure	6	4.1
	agree	78	53.4
	strongly agree	57	39.0
Total		146	100.0

92.4% of participants in the study agreed that task sharing was a feature of their school's operation.

Table 43

(SATQM Item 51) This school discourages organisational factors which may inhibit quality outcomes.

		Frequency	Valid Percent
Valid	disagree	20	13.9
	unsure	56	38.9
	agree	54	37.5
	strongly agree	14	9.7
Total		146	100.0

A majority of respondents (52.8%) were either unsure or disagreed with this question.

Table 44

Factor Analysis of Deming's Point 10: Artificial goals

	Factor loading
(sat38) This school believes that arbitrary performance targets contribute towards enhanced outcomes for students.	.776
(sat24) Whole school exhortations assist with the achievement of quality.	.735
(sat10) The school utilises motivational slogans as a means to effect improvements.	.515
(sat52) In this school programs are evaluated rather than individuals	-550

Table 45

(SATQM Item 10) The school utilises motivational slogans as a means to effect improvements.

		Frequency	Valid Percent
Valid	strongly disagree	4	2.7
	disagree	32	21.9
	unsure	40	27.4
	agree	55	37.7
	strongly agree	15	10.3
Total		146	100.0

There was a spread in the responses to this question. Almost half agreed (48%), but one quarter (24.6%) disagreed.

Table 46

(SATQM Item 24) Whole school exhortations assist with the achievement of quality.

		Frequency	Valid Percent
Valid	strongly disagree	9	6.3
	disagree	62	43.4
	unsure	56	39.2
	agree	11	7.7
	strongly agree	5	3.5
Total		146	100.0

Half the respondents (49.7%) disagreed with this question while only 11.2% agreed. Almost two in five (39.2%) were unsure.

Table 47

(SATQM Item 38) This school believes that arbitrary performance targets contribute towards enhanced outcomes for students.

		Frequency	Valid Percent
Valid	strongly disagree	15	10.4
	disagree	64	44.4
	unsure	48	33.3
	agree	14	9.7
	strongly agree	3	2.1
Total		146	100.0

54.8% of respondents disagreed with this question, while only 11.8% agreed.

Table 48

(SATQM Item 52) In this school programs are evaluated rather than individuals.

		Frequency	Valid Percent
Valid	strongly disagree	8	5.5
	disagree	29	19.9
	unsure	38	26.0
	agree	55	37.7
	strongly agree	16	11.0
Total		146	100.0

There was quite a variation in responses to this question. Almost half (48.7%) agreed while other respondents were spread almost evenly in disagreement or expressing uncertainty.

Table 49

Factor Analysis of Deming's Point 11: Standards

	Factor loading
(sat11) I don't need achievement targets to be set for me in this school.	.777
(sat25) I am given set standards for student achievement in my class.	.783
(sat39) Everyone in the school is expected to reach a set standard.	.647
(sat53) Specific targets for student performance are set for me to achieve.	.819

Table 50

(SATQM Item 11) I don't need achievement standards to be set for me in this school.

		Frequency	Valid Percent
Valid	strongly disagree	7	4.9
	disagree	33	22.9
	unsure	27	18.8
	agree	59	41.0
	strongly agree	18	12.5
Total		146	100.0

53.5% agreed with this question. 27.8% disagreed.

Table 51

(SATQM Item 25) I am given set standards for student achievement in my class.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	24	16.7
	unsure	28	19.4
	agree	65	45.1
	strongly agree	25	17.4
Total		146	100.0

62.5% agreed with this question, whilst one fifth were unsure.

Table 52

(SATQM Item 39) Everyone in the school is expected to reach a set standard.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	41	28.3
	unsure	36	24.8
	agree	53	36.6
	strongly agree	13	9.0
Total		146	100.0

Less than half of respondents (45.6) agreed with this question with substantial numbers being either unsure or in disagreement.

Table 53

(SATQM Item 53) Specific targets for student performance are set for me to achieve.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	20	13.9
	unsure	36	25.0
	agree	66	45.8
	strongly agree	20	13.9
Total		146	100.0

Almost 60% of respondents agreed with this item while one quarter were unsure.

Table 54

Factor Analysis of Deming's Point 12: Recognition

	Factor loading
(sat12) I am given credit for my accomplishments.	.861
(sat26) I am encouraged to feel proud of my achievements.	.902
(sat54) I am recognised for my personal efforts.	.603

Table 55

(SATQM Item 12) I am given credit for my accomplishments.

		Frequency	Valid Percent
Valid	strongly disagree	3	2.1
	disagree	8	5.5
	unsure	16	11.0
	agree	80	54.8
	strongly agree	39	26.7
Total		146	100.0

80.5% agreed with this question.

Table 56

(SATQM Item 26) I am encouraged to feel proud of my achievements.

		Frequency	Valid Percent
Valid	strongly disagree	3	2.1
	disagree	10	6.8
	unsure	23	15.8
	agree	81	55.5
	strongly agree	29	19.9
	Total	146	100.0

75.4% agreed with this question while only 8.9% disagreed.

Table 57

(SATQM Item 54) I am recognised for my personal efforts.

		Frequency	Valid Percent
Valid	disagree	8	5.5
	unsure	29	19.9
	agree	86	58.9
	strongly agree	23	15.8
Total		146	100.0

74.7% of respondents agree with this question while only 5.5%disagree.

Table 58

Factor Analysis of Deming's Point 13: Professional development

	Factor loading
(sat13) I feel personally empowered to commit to continuing education.	.685
(sat27) I am solely responsible for improving my performance	.691
(sat41) At this school, I am constantly acquiring new professional skills.	.782
(sat55) The school trains me to do a better job.	.703

Table 59

(SATQM Item 13) I feel personally empowered to commit to continuing education.

		Frequency	Valid Percent
Valid	disagree	4	2.7
	unsure	18	12.3
	agree	82	56.2
	strongly agree	42	28.8
Total		146	100.0

85% agreed with this item.

Table 60

(SATQM Item 27) I am solely responsible for improving my performance.

		Frequency	Valid Percent
Valid	strongly disagree	6	4.1
	disagree	65	44.5
	unsure	19	13.0
	agree	46	31.5
	strongly agree	10	6.8
Total		146	100.0

48.6% disagreed with this question, while only 38.3% agreed.

Table 61

(SATQM Item 41) At this school, I am constantly acquiring new professional skills.

		Frequency	Valid Percent
Valid	disagree	8	5.5
	unsure	16	11.0
	agree	91	62.3
	strongly agree	31	21.2
Total		146	100.0

A high 83.5 % of respondents agreed that they are acquiring constantly new skills.

Table 62

(SATQM Item 55) The school trains me to do a better job.

		Frequency	Valid Percent
Valid	strongly disagree	3	2.1
	disagree	13	8.9
	unsure	31	21.2
	agree	88	60.3
	strongly agree	11	7.5
Total		146	100.0

Two thirds (67.8%) of respondents agreed that the school trains them to do a better job, while only 11% disagreed.

Table 63

Factor Analysis of Deming's Point 14: Responsibility for action

	Factor loading
(sat14) Everyone contributes towards improving the school	.832
(sat28) Not all staff are required to improve in the school.	.760
(sat42) All staff share responsibility for ensuring enhancements to the school's operational processes.	.855
(sat56) Senior staff are predominantly responsible for school improvement.	.392

Table 64

(SATQM Item 14) Everyone contributes towards improving the school

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	16	11.0
	unsure	10	6.8
	agree	72	49.3
	strongly agree	47	32.2
Total		146	100.0

82.5% agreed with this question and 11.7% disagreed.

Table 65

(SATQM Item 28) Not all staff are required to improve in the school.

		Frequency	Valid Percent
Valid	strongly disagree	5	3.4
	disagree	14	9.6
	unsure	19	13.0
	agree	73	50.0
	strongly agree	35	24.0
Total		146	100.0

Three quarters (74%) of respondents agreed with this item.

Table 66

(SATQM Item 42) All staff share responsibility for ensuring enhancements to the school's operational processes.

		Frequency	Valid Percent
Valid	disagree	9	6.2
	unsure	9	6.2
	agree	92	63.4
	strongly agree	35	24.1
Total		146	100.0

87.5% of respondents were in agreement with this question, while only 6.2% disagreed.

Table 67

(SATQM Item 56) Senior staff are predominantly responsible for school improvement.

		Frequency	Valid Percent
Valid	strongly disagree	4	2.7
	disagree	13	8.9
	unsure	26	17.8
	agree	85	58.2
	strongly agree	18	12.3
Total		146	100.0

There was 70.5% agreement with this question.

SLEQ (School Level Environment Questionnaire) Results

Table 68

Factor Analysis of SLEQ Construct 1: Student Support

	Factor Loading
(sle41) Most students are well mannered and respectful to school staff.	.823
(sle17) I am the most important critic of my performance.	.817
(sle33) Students get along well with teachers.	.809
(sle25) There are many noisy, badly behaved students.	.594
(sle49) Very strict discipline is needed to control many of the students.	.594

Table 69

(SLEQ Item 17) I am the most important critic of my performance.

		Frequency	Valid Percent
Valid	disagree	1	.7
	unsure	1	.7
	agree	99	68.3
	strongly agree	44	30.3
Total		145	100.0

Table 70

(SLEQ Item 25) There are many noisy, badly behaved students.

		Frequency	Valid Percent
Valid	strongly disagree	3	2.1
	disagree	14	9.7
	unsure	12	8.3
	agree	73	50.3
	strongly agree	43	29.7
Total		145	100.0

Table 71

(SLEQ Item 33) Students get along well with teachers.

		Frequency	Valid Percent
Valid	unsure	2	1.4
	agree	98	67.6
	strongly agree	45	31.0
Total		145	100.0

Table 72

(SLEQ Item 41) Most students are well mannered and respectful to school staff.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	4	2.7
	unsure	4	2.7
	agree	98	67.1
	strongly agree	39	26.7
Total		146	100.0

Table 73

(SLEQ Item 49) Very strict discipline is needed to control many of the students.

		Frequency	Valid Percent
Valid	strongly disagree	3	2.1
	disagree	18	12.3
	unsure	15	10.3
	agree	78	53.4
	strongly agree	32	21.9
Total		146	100.0

Table 74

Factor Analysis of SLEQ Construct 2: Affiliation

	Factor Loading
(sle18) I am ignored by other teachers.	.756
(sle50) I often feel lonely and left out of things in the staffroom.	.597
(sle26) I feel I could rely on my colleagues for assistance if I needed it.	.730
(sle42) I feel that I have many friends among my colleagues at this school.	.693
(sle34) My colleagues seldom take notice of my professional views and opinions	.597

Table 75

(SLEQ Item 18) I am ignored by other teachers.

		Frequency	Valid Percent
Valid	unsure	3	2.1
	agree	56	38.6
	strongly agree	86	59.3
Total		145	100.0

Table 76

(SLEQ Item 26) I feel I could rely on my colleagues for assistance if I needed it.

		Frequency	Valid Percent
Valid	disagree	1	.7
	unsure	1	.7
	agree	77	52.7
	strongly agree	67	45.9
Total		146	100.0

Table 77

(SLEQ Item 34) My colleagues seldom take notice of my professional views and opinions.

		Frequency	Valid Percent
Valid	disagree	4	2.7
	unsure	8	5.5
	agree	102	69.9
	strongly agree	32	21.9
Total		146	100.0

Table 78

(SLEQ Item 42) I feel that I have many friends among my colleagues at this school.

		Frequency	Valid Percent
Valid	disagree	5	3.4
	unsure	19	13.0
	agree	95	65.1
	strongly agree	27	18.5
Total		146	100.0

Table 79

(SLEQ Item 50) I often feel lonely and left out of things in the staffroom.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	6	4.1
	unsure	6	4.1
	agree	90	61.6
	strongly agree	43	29.5
Total		146	100.0

Table 80

Factor Analysis of SLEQ Construct 3: Professional interest

	Factor Loading
(sle43) Teachers are keen to learn from their colleagues	.738
(sle51) Teachers show considerable interest in the professional activities of their colleagues.	.709
(sle35) Teachers show little interest in what is happening in other schools.	.653
(sle3) Teachers frequently discuss methods and strategies with each other.	.641
(sle27) Many teachers attend in-service and other professional development activities.	.595
(sle11) Teachers avoid talking to each other about teaching and learning.	.583
(sle19) Professional matters are seldom discussed at staff meetings.	.539

Table 81

(SLEQ Item 3) Teachers frequently discuss methods and strategies with others.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	8	5.5
	unsure	10	6.9
	agree	85	58.6
	strongly agree	41	28.3
Total		146	100.0

Table 82

(SLEQ Item 11) Teachers avoid talking with each other about teaching and learning.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	5	3.4
	unsure	8	5.5
	agree	68	46.9
	strongly agree	63	43.4
Total		146	100.0

Table 83

(SLEQ Item 19) Professional matters are seldom discussed during staff meetings.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	1	.7
	unsure	5	3.4
	agree	62	42.8
	strongly agree	76	52.4
Total		146	100.0

Table 84

(SLEQ Item 27) Many teachers attend in-service and other professional development courses.

		Frequency	Valid Percent
Valid	disagree	6	4.1
	unsure	8	5.5
	agree	93	64.1
	strongly agree	38	26.2
Total		146	100.0

Table 85

(SLEQ Item 35) Teachers show little interest in what is happening in other schools.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	11	7.5
	unsure	24	16.4
	agree	96	65.8
	strongly agree	14	9.6
Total		146	100.0

Table 86

(SLEQ Item 43) Teachers are keen to learn from their colleagues.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	5	3.5
	unsure	13	9.0
	agree	99	68.8
	strongly agree	26	18.1
Total		146	100.0

Table 87

(SLEQ Item 51) Teachers show considerable interest in the professional activities of their colleagues.

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	15	10.3
	unsure	18	12.4
	agree	96	66.2
	strongly agree	15	10.3
Total		146	100.0

Table 88

Factor Analysis of SLEQ Construct 4: Staff freedom

	Factor Loading
(sle36) I am allowed to do almost as I please in the classroom.	.801
(sle28) There are few rules and regulations that I am expected to follow.	.801

Table 89

(SLEQ Item 28) There are few rules and regulations that I am expected to follow.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	50	34.7
	unsure	28	19.4
	agree	55	38.2
	strongly agree	9	6.3
Total		144	100.0

Table 90

(SLEQ Item 36) I am allowed to do almost as I please in the classroom.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	33	22.8
	unsure	27	18.6
	agree	71	49.0
	strongly agree	12	8.3
Total		145	100.0

Table 91

Factor Analysis of SLEQ Construct 5: Participatory decision making

	Factor Loading
(sle53) I have very little say in the running of the school.	.835
(sle5) Decisions about the running of the school are usually made by the principal or a small group of teachers.	.757
(sle21) Action can usually be taken without gaining the approval of the subject department head or a senior member of staff	.689

Table 92

(SLEQ Item 5) Decisions about the running of the school are usually made by the principal or a small group of teachers.

		Frequency	Valid Percent
Valid	strongly disagree	4	2.8
	disagree	20	13.9
	unsure	8	5.6
	agree	75	52.1
	strongly agree	37	25.7
Total		144	100.0

Table 93

(SLEQ Item 21) Action can usually be taken without gaining the approval of the subject department head or a senior member of staff

		Frequency	Valid Percent
Valid	strongly disagree	4	2.8
	disagree	25	17.5
	unsure	30	21.0
	agree	73	51.0
	strongly agree	11	7.7
Total		143	100.0

Table 94

(SLEQ Item 53) I have very little say in the running of the school.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	11	7.6
	unsure	18	12.5
	agree	84	58.3
	strongly agree	29	20.1
Total		146	100.0

Table 95

Factor Analysis of SLEQ Construct 6: Innovation

	Factor Loading
(sle22) There is a great deal of resistance to proposals for curriculum change.	.763
(sle14) Teachers are encouraged to be innovative in this school	.706
(sle46) There is much experimentation with different teaching approaches.	.674
(sle38) New courses or curriculum materials are seldom implemented in the school.	.663
(sle54) New and different ideas are always being tried in this school.	.601
(sle30) Most teachers like the idea of change.	.530

Table 96

(SLEQ Item 14) Teachers are encouraged to be innovative in this school

		Frequency	Valid Percent
Valid	strongly disagree	1	.7
	disagree	6	4.1
	unsure	12	8.3
	agree	79	54.5
	strongly agree	47	32.4
Total		145	100.0

Table 97

(SLEQ Item 22) There is a great deal of resistance to proposals for curriculum change.

		Frequency	Valid Percent
Valid	disagree	4	2.8
	unsure	28	19.6
	agree	83	58.0
	strongly agree	28	19.6
Total		143	100.0

Table 98

(SLEQ Item 30) Most teachers like the idea of change.

		Frequency	Valid Percent
Valid	disagree	27	18.5
	unsure	63	43.2
	agree	50	34.2
	strongly agree	6	4.1
Total		146	100.0

Table 99

(SLEQ Item 38) New courses or curriculum materials are seldom implemented in the school.

		Frequency	Valid Percent
Valid	disagree	3	2.1
	unsure	5	3.5
	agree	104	72.2
	strongly agree	32	22.2
Total		144	100.0

Table 100

(SLEQ Item 46) There is much experimentation with different teaching approaches.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	27	18.5
	unsure	37	25.3
	agree	72	49.3
	strongly agree	8	5.5
Total		146	100.0

Table 101

(SLEQ Item 54) New and different ideas are always being tried in this school.

		Frequency	Valid Percent
Valid	disagree	12	8.3
	unsure	33	22.8
	agree	91	62.8
	strongly agree	9	6.2
Total		145	100.0

Table 102

Factor Analysis of SLEQ Construct 7: Resource adequacy

	Factor Loading
(sle55) Projectors and filmstrips, transparencies and films are usually available when needed.	.767
(sle23) Video equipment, tapes and films are readily available and accessible.	.755
(sle39) Tape recorders and cassettes are seldom available when needed.	.649
(sle15) The supply of equipment and resources is adequate.	.548

Table 103

(SLEQ Item 15) The supply of equipment and resources is adequate.

		Frequency	Valid Percent
Valid	strongly disagree	6	4.1
	disagree	30	20.7
	unsure	16	11.0
	agree	76	52.4
	strongly agree	17	11.7
Total		145	100.0

Table 104

(SLEQ Item 23) Video equipment, tapes and films are readily available and accessible.

		Frequency	Valid Percent
Valid	strongly disagree	6	4.1
	disagree	21	14.5
	unsure	14	9.7
	agree	89	61.4
	strongly agree	15	10.3
Total		145	100.0

Table 105

(SLEQ Item 39) Tape recorders and cassettes are seldom available when needed.

		Frequency	Valid Percent
Valid	strongly disagree	4	2.8
	disagree	11	7.6
	unsure	13	9.0
	agree	94	64.8
	strongly agree	23	15.9
Total		145	100.0

Table 106

(SLEQ Item 55) Projectors and filmstrips, transparencies and films are usually available when needed.

		Frequency	Valid Percent
Valid	strongly disagree	4	2.8
	disagree	22	15.2
	unsure	35	24.1
	agree	79	54.5
	strongly agree	5	3.4
Total		145	100.0

Table 107

Factor Analysis of SLEQ Construct 8: Work pressure

	Factor Loading
(sle16) Teachers have to work long hours to complete all their work.	.784
(sle40) You can take it easy and still get work done.	.719
(sle56) It is hard to keep up with your workload.	.700
(sle24) Teachers do not have to work very hard in this school.	.608

Table 108

(SLEQ Item 16) Teachers have to work long hours to complete all their work.

		Frequency	Valid Percent
Valid	strongly disagree	4	2.8
	disagree	27	18.6
	unsure	20	13.8
	agree	71	49.0
	strongly agree	23	15.9
Total		145	100.0

Table 109

(SLEQ Item 24) Teachers do not have to work very hard in this school.

		Frequency	Valid Percent
Valid	disagree	2	1.4
	unsure	5	3.5
	agree	65	45.1
	strongly agree	72	50.0
Total		144	100.0

Table 110

(SLEQ Item 40) You can take it easy and still get work done.

		Frequency	Valid Percent
Valid	disagree	5	3.4
	unsure	12	8.3
	agree	68	46.9
	strongly agree	60	41.4
Total		146	100.0

Table 111

(SLEQ Item 56) It is hard to keep up with your workload.

		Frequency	Valid Percent
Valid	strongly disagree	2	1.4
	disagree	33	22.8
	unsure	28	19.3
	agree	66	45.5
	strongly agree	16	11.0
Total		145	100.0

Concurrent Validity

In order to ascertain concurrent validity of the SATQM and SLEQ instruments, a principal component analysis of SATQM factors and SLEQ factors was completed. The results of this analysis are shown as Table 112.

To assist with differentiation between the SATQM items and SLEQ items, the latter are shown in bold type. The significance of the information shown in Table 112 will be discussed further in Chapter 5.

Table 112

Concurrent Validity of SATQM Factors and SLEQ Factors

	Component					
	1	2	3	4	5	6
SLEQ5: participatory decision-making	.824					
SLEQ2: affiliation	.744					
SATQM9: teamwork	.741					
SATQM12: recognition	.708					
SATQM14: responsibility for action	.664					
SLEQ3: professional interest	.656					
SATQM7: leadership	.640					
SLEQ6: innovation	.639					
SATQM8: personal empowerment	.467					
SATQM13: professional development	.465					
SATQM1: constancy of purpose		.833				
SATQM5: production and service		.785				
SATQM2: adopting new philosophy		.687				
SATQM6: on-the-job training		.674				
SATQM3: senior staff supervision			.755			
SATQM11: standards			.751			
SLEQ4: staff freedom			.694			
SLEQ1: student support				.697		
SATQM4: cost minimization				.668		
SLEQ7: resource adequacy				.462		
SLEQ8: work pressure					.867	
SATQM10: artificial goals						.925

CHAPTER 4

RESULTS

Introduction

The data gathered for the study were analysed using a computer program, SPSS Version 9.0, 1999. The details of the analysis are set out below in a variety of tables, together with some supplementary comment, by each of the hypotheses that framed this study. Chapter 5 summarises and discusses these results.

Tables and Figures

Hypotheses in relation to Principals, Senior Staff and Teachers

Hypothesis 1

There is no statistically significant difference between the mean scores on the sub-scale Constancy of Purpose (as measured by the Schools and Total

Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 113

Descriptives - Constancy of Purpose

	N	Mean	Std. Deviation
principal	11	4.3864	.4382
senior staff	13	4.5192	.3139
teacher	121	4.0434	.5446
Total	145	4.1121	.5416

Table 114

Anova - Constancy of Purpose

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.554	2	1.777	6.521	0.002
Within Groups	38.688	142	.272		
Total	42.241	144			

The F ratio of 6.512 indicates the probability of occurrence under Hypothesis 1 of 0.002. As this is less than p=0.05 then the null hypothesis is rejected.

Table 115

Multiple Comparisons (Scheffe) - Constancy of Purpose

(I) Role2	(J) Role2	Mean Difference (I-J)	
principal	senior staff	-.1329	
	teacher	.3430	
senior staff	principal	.1329	
	teacher	.4758	*
teacher	principal	-.3430	
	senior staff	-.4758	*

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers on the Constancy of Purpose sub-scale differed significantly from the mean score of senior staff. Although not significant at the 0.05 level, the mean score of teachers and principals differed in the same direction.

Hypothesis 4

There is no statistically significant difference between the mean scores on the sub-scale Cost Minimization (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 116

Descriptives - Cost Minimization

	N	Mean	Standard Deviation
Principal	11	3.9318	.2759
Senior staff	13	4.1346	.3766
Teacher	121	3.5888	.5835
Total	145	3.6638	.5754

Table 117

Anova - Cost Minimization

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.352	2	2.176	7.132	.001
Within Groups	43.321	142	.305		
Total	47.672	144			

The F ratio of 7.132 indicates the probability of occurrence under Hypothesis 4 of 0.001. As this is less than p=0.05 then the null hypothesis is rejected.

Table 118

Multiple Comparisons (Scheffe) - Cost Minimization

(I) Role2	(J) Role2	Mean Difference (I-J)	
principal	senior staff	-.2028	
	teacher	.3430	
senior staff	principal	.2028	
	teacher	.5458	*
teacher	principal	-.3430	
	senior staff	-.5458	*

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers on the Cost Minimization sub-scale differed significantly from the mean score of senior staff. Although not significant at the 0.05 level, the mean score of teachers and principals differed in the same direction.

Hypothesis 5

There is no statistically significant difference between the mean scores on the sub-scale Improvement in Product and Service (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 119

Descriptives - Improvement in Product and Service

	N	Mean	Standard Deviation
Principal	11	4.2424	.4240
Senior staff	13	4.3333	.4714
Teacher	121	3.9559	.6220
Total	145	4.0115	.6078

Table 120

Anova - Improvement in Product and Service

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.307	2	1.153	3.218	.043
Within Groups	50.896	142	.358		
Total	53.203	144			

The F ratio of 3.218 indicates the probability of occurrence under Hypothesis 5 of 0.043. As this is less than p=0.05 then the null hypothesis is rejected.

Table 121

Multiple Comparisons (Scheffe) - Improvement in Product and Service

(I) Role2	(J) Role2	Mean Difference (I-J)	
principal	senior staff	-9.0909E-02	
	teacher	.2865	
senior staff	principal	9.091E-02	
	teacher	.3774	*
teacher	principal	-.2865	
	senior staff	-.3774	*

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers on the Improvement in Production and Service sub-scale differed significantly from the mean score of senior staff. Although not significant at the 0.05 level, the mean score of teachers and principals differed in the same direction.

Hypothesis 6

There is no statistically significant difference between the mean scores on the sub-scale On-the-job Training (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 122

Descriptives - On-the-job Training

	N	Mean	Standard Deviation
Principal	11	4.3636	.3769
Senior staff	13	4.1346	.5554
Teacher	121	3.8554	.5212
Total	145	3.9190	.5335

Table 123

Anova - On-the-job Training

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.269	2	1.634	6.154	.003
Within Groups	37.716	142	.266		
Total	40.985	144			

The F ratio of 6.154 indicates the probability of occurrence under Hypothesis 6 of 0.003. As this is less than p=0.05 then the null hypothesis is rejected.

Table 124

Multiple Comparisons (Scheffe) - On-the-job Training

(I) Role2	(J) Role2	Mean Difference (I-J)	
principal	senior staff	.2290	
	teacher	.5083	*
senior staff	principal	-.2290	
	teacher	.2792	
teacher	principal	-.5083	*
	senior staff	-.2792	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers on the On-the-job Training sub-scale differed significantly from the mean score of principals. Although not significant at the 0.05 level, the mean score of teachers and senior staff differed in the same direction.

Hypothesis 7

There is no statistically significant difference between the mean scores on the sub-scale Leadership (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 125

Descriptives - Leadership

	N	Mean	Standard Deviation
Principal	11	4.6591	.3405
Senior staff	13	4.4615	.4984
Teacher	121	3.9256	.6297
Total	145	4.0293	.6445

Table 126

Anova - Leadership

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.092	2	4.046	11.109	.000
Within Groups	51.720	142	.364		
Total	59.813	144			

The F ratio of 11.109indicates the probability of occurrence under Hypothesis 7 of 0.000. As this is less than p=0.05 then the null hypothesis is rejected.

Table 127

Multiple Comparisons (Scheffe) - Leadership

(I) Role2	(J) Role2	Mean Difference (I-J)	
principal	senior staff	.1976	
	teacher	.7335	*
senior staff	principal	-.1976	
	teacher	.5359	*
teacher	principal	-.7335	*
	senior staff	-.5359	*

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of principals on the Leadership sub-scale differed from the mean score of teachers. It also indicates that the mean score of senior staff on the Leadership sub-scale differed from the mean score of teachers.

Hypothesis 8

There is no statistically significant difference between the mean scores on the sub-scale Personal Empowerment (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 128

Descriptives - Personal Empowerment

	N	Mean	Standard Deviation
Principal	11	4.1515	.3761
Senior staff	13	4.3590	.2874
Teacher	121	3.8402	.5513
Total	145	3.9103	.5447

Table 129

Anova - Personal Empowerment

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.851	2	1.926	7.034	.001
Within Groups	38.872	142	.274		
Total	42.723	144			

The F ratio of 7.034 indicates the probability of occurrence under Hypothesis 8 of 0.001. As this is less than p=0.05 then the null hypothesis is rejected.

Table 130

Multiple Comparisons (Scheffe) - Personal Empowerment

(I) Role2	(J) Role2	Mean Difference (I-J)	
principal	senior staff	-.2075	
	teacher	3113	
senior staff	principal	.2075	
	teacher	.5188	*
teacher	principal	-.3113	
	senior staff	-.5188	*

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers on the Personal Empowerment sub-scale differed significantly from the mean score of senior staff. Although not significant at the 0.05 level, the mean score of teachers and principals differed in the same direction.

Hypothesis 10

There is no statistically significant difference between the mean scores on the sub-scale Artificial Goals (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 131

Descriptives - Artificial Goals

	N	Mean	Standard Deviation
Principal	11	4.0909	.7006
Senior staff	13	3.6154	1.0439
Teacher	121	3.1901	1.0748
Total	145	3.2966	1.0745

Table 132

Anova - Artificial Goals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.634	2	4.817	4.368	.014
Within Groups	156.614	142	1.103		
Total	166.248	144			

The F ratio of 4.368 indicates the probability of occurrence under Hypothesis 10 of 0.014. As this is less than p=0.05 then the null hypothesis is rejected.

Table 133

Multiple Comparisons (Scheffe) - Artificial Goals

(I) Role2	(J) Role2	Mean Difference (I-J)	
principal	senior staff	.4755	
	teacher	.9008	*
senior staff	principal	-.4755	
	teacher	.4253	
teacher	principal	-.9008	*
	senior staff	-.4253	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers on the Artificial Goals sub-scale differed from the mean score of principals. Although not significant at the 0.05 level, the mean score of teachers and senior staffs differed in the same direction.

Hypothesis 12

There is no statistically significant difference between the mean scores on the sub-scale Recognition (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by principals, senior staff and teachers at the 0.05 level of confidence.

Table 134

Descriptives - Recognition

	N	Mean	Standard Deviation
Principal	11	4.3333	.4216
Senior staff	13	4.2821	.5243
Teacher	121	3.8127	.6816
Total	145	3.8943	.6755

Table 135

Anova - Recognition

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.881	2	2.441	5.697	.004
Within Groups	60.831	142	.428		
Total	65.712	144			

The F ratio of 5.697 indicates the probability of occurrence under Hypothesis 12 of 0.004. As this is less than p=0.05 then the null hypothesis is rejected.

Table 136

Multiple Comparisons (Scheffe) - Recognition

(I) Role2	(J) Role2	Mean Difference (I-J)
principal	senior staff	5.128E-02
	teacher	.5207
senior staff	principal	-5.1282E-02
	teacher	.4694
teacher	principal	-.5207
	senior staff	-.4694

The Scheffe Post Hoc Procedure did not indicate where specific difference existed.

Hypotheses 2, 3, 9, 10, 11, 13, 14

For all other Hypotheses enumerated in the heading above, as measured by the Schools and Total Quality Management [SATQM] questionnaire and as obtained by principals, senior staff, and teachers, the F ratio indicated the probability of occurrence as being more than p=0.05, so the null hypothesis is accepted.

Hypotheses in relation to Total Number of Years Taught

Hypothesis 17

There is no statistically significant difference between the mean scores on the sub-scale Senior Staff Supervision (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by 'total number of years taught' (less than three years, three to ten years, ten to twenty years and more than twenty years) at the 0.05 level of confidence.

Table 137

Descriptives - Senior Staff Supervision

	N	Mean	Standard Deviation
less than three years	13	3.3846	.9608
three to ten years	27	4.0556	.7511
eleven to twenty years	63	3.7857	.9320
more than twenty years	41	4.1463	.8533
Total	144	3.9028	.9012

Table 138

Anova - Senior Staff Supervision

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.416	3	2.472	3.183	.026
Within Groups	108.723	140	.777		
Total	116.139	143			

The F ratio of 3.183 indicates the probability of occurrence under Hypothesis 17 of 0.026. As this is less than p=0.05 then the null hypothesis is rejected.

Table 139

Multiple Comparisons (Scheffe) - Senior Staff Supervision

(I) years taught	(J) years taught	Mean Difference (I-J)
less than three years	three to ten years	.6709
	eleven to twenty years	.4011
	more than twenty years	.7617
three to ten years	less than three years	.6709
	eleven to twenty years	.2698
	more than twenty years	-9.0786E-02
eleven to twenty years	less than three years	.4011
	three to ten years	-.2698
	more than twenty years	-.3606
more than twenty years	less than three years	.7617
	three to ten years	9.079E-02
	eleven to twenty years	.3606

The Scheffe Post Hoc Procedure did not indicate where specific difference existed. However, by observation, it appears from Table 137 that the respondents with less than three years experience seemed less certain about senior staff supervision when compared with respondents with three to ten, eleven to twenty, or more than twenty years experience. These latter groups appear to agree or strongly agree on this measure.

Hypothesis 18

There is no statistically significant difference between the mean scores on the sub-scale Cost Minimization (as measured by the Schools and Total Quality

Management [SATQM] questionnaire) as obtained by by 'total number of years taught' (less than three years, three to ten years, eleven to twenty years and more than twenty years) at the 0.05 level of confidence.

Table 140

Descriptives - Cost Minimization

	N	Mean	Standard Deviation
less than three years	13	3.2692	.3139
three to ten years	27	3.8056	.6097
eleven to twenty years	63	3.7103	.5960
more than twenty years	43	3.6453	.5516
Total	146	3.6695	.5776

Table 141

Anova - Cost Minimization

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.713	3	.904	2.812	.042
Within Groups	45.654	142	.322		
Total	48.367	145			

The F ratio of 2.812 indicates the probability of occurrence under Hypothesis 18 of 0.042. As this is less than p=0.05 then the null hypothesis is rejected.

Table 142

Multiple Comparisons (Scheffe) - Cost Minimization

(I) years taught	(J) years taught	Mean Difference (I-J)
less than three years	three to ten years	-.5363
	eleven to twenty years	-.4411
	more than twenty years	-.3761
three to ten years	less than three years	.5363
	eleven to twenty years	-9.5238E-02
	more than twenty years	.1602
eleven to twenty years	less than three years	.4411
	three to ten years	-9.524E-02
	more than twenty years	.1602
more than twenty years	less than three years	.3761
	three to ten years	-.1602
	eleven to twenty years	-6.4969E-02

The Scheffe Post Hoc Procedure did not indicate where specific difference existed. However, by observation, it appears from Table 140 that the respondents with less than three years experience seemed less certain about cost minimization when compared with respondents with three to ten, eleven to twenty, or more than twenty years experience. These latter groups appear to agree more strongly on this measure.

Hypothesis 22

There is no statistically significant difference between the mean scores on the sub-scale Personal Empowerment (as measured by the Schools and Total

Quality Management [SATQM] questionnaire) as obtained by 'total number of years taught' (less than three years, three to ten years, eleven to twenty years and more than twenty years) at the 0.05 level of confidence.

Table 143

Descriptives - Personal Empowerment

	N	Mean	Standard Deviation
less than three years	13	3.6154	.7181
three to ten years	27	3.7654	.6782
eleven to twenty years	63	4.0053	.4419
more than twenty years	43	3.9535	.4911
Total	146	3.9110	.5429

Table 144

Anova - Personal Empowerment

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.346	3	.782	2.750	.045
Within Groups	40.385	142	.284		
Total	42.731	145			

The F ratio of 2.750 indicates the probability of occurrence under Hypothesis 22 of 0.045. As this is less than p=0.05 then the null hypothesis is rejected.

Table 145

Multiple Comparisons (Scheffe) - Personal Empowerment

(I) years taught	(J) years taught	Mean Difference (I-J)
less than three years	three to ten years	-.1500
	eleven to twenty years	-.3899
	more than twenty years	-.3391
three to ten years	less than three years	.1500
	eleven to twenty years	-.2399
	more than twenty years	-.1881
eleven to twenty years	less than three years	.3899
	three to ten years	.2399
	more than twenty years	5.180E-02
more than twenty years	less than three years	.3381
	three to ten years	.1881
	eleven to twenty years	-5.1803E-02

The Scheffe Post Hoc Procedure did not indicate where specific difference existed. However, respondents with less than three years experience seemed to be somewhat less in agreement than respondents with all other years experience.

Hypotheses 15, 16, 19, 20, 21, 23, 24, 25, 26, 27, and 28

For all other Hypotheses enumerated in the heading above, as measured by the Schools and Total Quality Management [SATQM] questionnaire and as obtained by 'total number of years taught' (less than three years, three to ten years, eleven to twenty years and more than twenty years), the F ratio

indicated the probability of occurrence as being more than p=0.05, so the null hypothesis is accepted.

Hypotheses in relation to Years Taught at Current School

Hypothesis 32

There is no statistically significant difference between the mean scores on the sub-scale Cost Minimization (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by 'Years at Current School' (less than one years, one to three years, four to ten years and more than ten years) at the 0.05 level of confidence.

Table 146

Descriptives - Cost Minimization

	N	Mean	Standard Deviation
less than one year	31	3.4194	.5859
one to three years	43	3.6512	.5673
four to ten years	61	3.8484	.5006
more than eleven years	11	3.4545	.7143
Total	146	3.6695	.5776

Table 147

Anova - Cost Minimization

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.414	3	1.471	4.753	.003
Within Groups	43.953	142	.310		
Total	48.367	145			

The F ratio of 4.753 indicates the probability of occurrence under Hypothesis 32 of 0.003. As this is less than p=0.05 then the null hypothesis is rejected.

Table 148

Multiple Comparisons (Scheffe) - Cost Minimization

(I) years taught	(J) years taught	Mean Difference (I-J)	
less than one year	one to three years	-.2318	
	four to ten years	-.4290	*
	more than eleven years	-3.5191E-02	
one to three years	less than one year	.2318	
	four to ten years	-.1972	
	more than eleven years	.1966	
four to ten years	less than one year	.4290	*
	one to three years	.1972	
	more than eleven years	.3938	
more than eleven years	less than one year	3.519E-02	
	one to three years	-.1966	
	four to ten years	-.3938	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers with four to ten year's experience at their current school on the Cost Minimization

sub-scale differed from the mean score of teachers with less than one year's experience at their current school.

Hypothesis 35

There is no statistically significant difference between the mean scores on the sub-scale Leadership (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by 'Years at Current School' (less than one years, one to three years, four to ten years and more than ten years) at the 0.05 level of confidence.

Table 149

Descriptives - Leadership

	N	Mean	Standard Deviation
less than one year	31	4.0565	.5232
one to three years	43	3.7267	.7634
four to ten years	61	4.2459	.5524
more than eleven years	11	3.8864	.4523
Total	146	4.1257	.6438

Table 150

Anova - Leadership

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.044	3	2.348	6.285	.000
Within Groups	53.047	142	.374		
Total	60.091	145			

The F ratio of 6.285 indicates the probability of occurrence under Hypothesis 35 of 0.000. As this is less than p=0.05 then the null hypothesis is rejected.

Table 151

Multiple Comparisons (Scheffe) - Leadership

(I) years taught	(J) years taught	Mean Difference (I-J)	
less than one year	one to three years	.3297	
	four to ten years	-.1895	
	more than eleven years	.1701	
one to three years	less than one year	-.3297	
	four to ten years	-.5192	*
	more than eleven years	-.1596	
four to ten years	less than one year	.1895	
	one to three years	.5192	*
	more than eleven years	.3595	
more than eleven years	less than one year	-.1701	
	one to three years	.1596	
	four to ten years	-.3595	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers with one to three year's experience at their current school on the Leadership sub-

scale differed from the mean score teachers with four to ten year's experience at their current school.

Hypothesis 37

There is no statistically significant difference between the mean scores on the sub-scale Teamwork (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by 'Years at Current School' (less than one years, one to three years, four to ten years and more than ten years) at the 0.05 level of confidence.

Table 152

Descriptives - Teamwork

	N	Mean	Standard Deviation
less than one year	31	3.6452	.5392
one to three years	43	3.5233	.6875
four to ten years	61	3.9262	.5762
more than eleven years	11	3.5455	.4850
Total	146	3.7192	.6193

Table 153

Anova - Teamwork

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.767	3	1.589	4.438	.005
Within Groups	50.844	142	.358		
Total	55.611	145			

The F ratio of 4.438 indicates the probability of occurrence under Hypothesis 37 of 0.005. As this is less than p=0.05 then the null hypothesis is rejected.

Table 154

Multiple Comparisons (Scheffe) - Teamwork

(I) years taught	(J) years taught	Mean Difference (I-J)	
less than one year	one to three years	.1219	
	four to ten years	-.2811	
	more than eleven years	9.971E-02	
one to three years	less than one year	-.1219	
	four to ten years	-.4030	*
	more than eleven years	-2.2199E-02	
four to ten years	less than one year	.2811	
	one to three years	.4030	*
	more than eleven years	.3808	
more than eleven years	less than one year	-9.9707E-02	
	one to three years	2.220E-02	
	four to ten years	-.3808	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers with four to ten year's experience at their current school on the Teamwork sub-scale

differed from the mean score teachers with one to three year's experience at their current school.

Hypothesis 40

There is no statistically significant difference between the mean scores on the sub-scale Recognition (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by 'Years at Current School' (less than one years, one to three years, four to ten years and more than ten years) at the 0.05 level of confidence.

Table 155

Descriptives - Recognition

	N	Mean	Standard Deviation
less than one year	31	3.9355	.6050
one to three years	43	3.6589	.8181
four to ten years	61	4.0383	.5647
more than eleven years	11	3.8788	.6195
Total	146	3.8927	.6735

Table 156

Anova - Recognition

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.701	3	1.234	2.823	.041
Within Groups	62.062	142	.437		
Total	65.763	145			

The F ratio of 2.823 indicates the probability of occurrence under Hypothesis 40 of 0.041. As this is less than p=0.05 then the null hypothesis is rejected.

Table 157

Multiple Comparisons (Scheffe) - Recognition

(I) years taught	(J) years taught	Mean Difference (I-J)	
less than one year	one to three years	.2766	
	four to ten years	-.1028	
	more than eleven years	5.670E-02	
one to three years	less than one year	-.2766	
	four to ten years	-.3793	*
	more than eleven years	-.2199	
four to ten years	less than one year	.1028	
	one to three years	.3793	*
	more than eleven years	.1595	
more than eleven years	less than one year	-5.6696E-02	
	one to three years	.2199	
	four to ten years	-.1595	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers with four to ten year's experience at their current school on the Recognition sub-

scale differed from the mean score teachers with one to three year's experience at their current school.

Hypotheses 29, 30, 31, 33, 34, 36, 38, 39, 41, and 42

For all other Hypotheses enumerated in the heading above, as measured by the Schools and Total Quality Management [SATQM] questionnaire and as obtained by 'years taught at current school' (less than one years, one to three years, four to ten years and more than ten years), the F ratio indicated the probability of occurrence as being more than p=0.05, so the null hypothesis is accepted.

Hypotheses in relation to Distance from District Office

Hypothesis 46

There is no statistically significant difference between the mean scores on the sub-scale Cost Minimization (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by Distance from District Office (less than ten kilometres, ten to twenty kilometres, twenty-one to fifty kilometres and more than fifty kilometres) at the 0.05 level of confidence.

Table 158

Descriptives - Cost Minimization

	N	Mean	Standard Deviation
less than ten kilometres	83	3.5361	.5454
ten to twenty kilometres	25	3.9200	.6321
twenty-one to fifty kilometres	20	3.7375	.5409
more than fifty kilometres	18	3.8611	.5438
Total	146	3.6695	.5776

Table 159

Anova - Cost Minimization

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.798	3	1.266	4.034	.009
Within Groups	44.569	142	.314		
Total	48.367	145			

The F ratio of 4.034 indicates the probability of occurrence under Hypothesis 46 of 0.009. As this is less than p=0.05 then the null hypothesis is rejected.

Table 160

Multiple Comparisons (Scheffe) - Cost Minimization

(I) distance from District Office	(J) distance from District Office	Mean Difference (I-J)	
less than ten kilometres	ten to twenty kilometres	-.3839	*
	twenty-one to fifty kilometres	-.2014	
	more than fifty kilometres	-.3250	
ten to twenty kilometres	less than ten kilometres	.3839	*
	twenty-one to fifty kilometres	.1825	
	more than fifty kilometres	5.889E-02	
twenty-one to fifty kilometres	less than ten kilometres	.2014	
	ten to twenty kilometres	-.1825	
	more than fifty kilometres	-.1236	
more than fifty kilometres	less than ten kilometres	.3250	
	ten to twenty kilometres	-5.8889E-02	
	twenty-one to fifty kilometres	.1236	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers whose school is within ten kilometres of District Office on the Cost Minimization sub-scale differed from the mean score of teachers whose school is ten to twenty kilometres from District Office. Although not significant to the 0.05 level, the mean score of teachers whose school is greater than 20 kilometres from District Office differed in the same direction from teachers whose school is within ten kilometres of District Office.

Hypothesis 51

There is no statistically significant difference between the mean scores on the sub-scale Teamwork (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by Distance from District Office (less than ten kilometres, ten to twenty kilometres, twenty-one to fifty kilometres and more than fifty kilometres) at the 0.05 level of confidence.

Table 161

Descriptives - Teamwork

	N	Mean	Standard Deviation
less than ten kilometres	83	3.7771	.6124
ten to twenty kilometres	25	3.8300	.5435
twenty-one to fifty kilometres	20	3.3500	.6356
more than fifty kilometres	18	3.7083	.6316
Total	146	3.7192	.6193

Table 162

Anova - Teamwork

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.314	3	1.105	2.999	.033
Within Groups	52.298	142	.368		
Total	55.611	145			

The F ratio of 2.999 indicates the probability of occurrence under Hypothesis 51 of 0.033. As this is less than p=0.05 then the null hypothesis is rejected.

Table 163

Multiple Comparisons (Scheffe) - Teamwork

(I) distance from District Office	(J) distance from District Office	Mean Difference (I-J)
less than ten kilometres	ten to twenty kilometres	-5.2892E-02
	twenty-one to fifty kilometres	.4271
	more than fifty kilometres	6.878E-02
ten to twenty kilometres	less than ten kilometres	5.289E-02
	twenty-one to fifty kilometres	.4800
	more than fifty kilometres	.1217
twenty-one to fifty kilometres	less than ten kilometres	-.4271
	ten to twenty kilometres	-.4800
	more than fifty kilometres	-.3583
more than fifty kilometres	less than ten kilometres	-6.8775E-02
	ten to twenty kilometres	-.1217
	twenty-one to fifty kilometres	.3583

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure did not indicate where specific difference existed.

Hypothesis 52

There is no statistically significant difference between the mean scores on the sub-scale Artificial Goals (as measured by the Schools and Total Quality Management [SATQM] questionnaire) as obtained by Distance from District Office (less than ten kilometres, ten to twenty kilometres, twenty-one to fifty kilometres and more than fifty kilometres) at the 0.05 level of confidence.

Table 164

Descriptives - Artificial Goals

	N	Mean	Standard Deviation
less than ten kilometres	83	3.2410	1.0886
ten to twenty kilometres	25	3.7200	.8907
twenty-one to fifty kilometres	20	3.5500	.9445
more than fifty kilometres	18	2.6111	1.0922
Total	146	3.2877	1.0761

Table 165

Anova - Artificial Goals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.469	3	4.823	4.463	.005
Within Groups	153.449	142	1.081		
Total	167.918	145			

The F ratio of 4.463 indicates the probability of occurrence under Hypothesis 52 of 0.005. As this is less than p=0.05 then the null hypothesis is rejected.

Table 166

Multiple Comparisons (Scheffe) - Articial Goals

(I) distance from District Office	(J) distance from District Office	Mean Difference (I-J)	
less than ten kilometres	ten to twenty kilometres	-.4709	
	twenty-one to fifty kilometres	-.3090	
	more than fifty kilometres	.6299	
ten to twenty kilometres	less than ten kilometres	.4790	
	twenty-one to fifty kilometres	.1700	
	more than fifty kilometres	1.1089	*
twenty-one to fifty kilometres	less than ten kilometres	.3090	
	ten to twenty kilometres	-.1700	
	more than fifty kilometres	.9389	
more than fifty kilometres	less than ten kilometres	-.6299	
	ten to twenty kilometres	-1.1089	*
	twenty-one to fifty kilometres	-.9389	

* The mean difference is significant at the 0.05 level.

The Scheffe Post Hoc Procedure indicates that the mean score of teachers on the Artificial Goals sub-scale in schools that are situated ten to twenty kilometres from District Office differed from the mean score of teachers at schools in excess of fifty kilometres from District Office.

Hypotheses 43, 44, 45, 47, 48, 49, 50, 53, 54, 55, and 56.

For all other Hypotheses enumerated in the heading above, as measured by the Schools and Total Quality Management [SATQM] questionnaire and as obtained by Distance from District Office (less than ten kilometres, ten to twenty kilometres, twenty-one to fifty and more than fifty kilometres), the F

ratio indicated the probability of occurrence as being more than p=0.05, so the null hypothesis is accepted.

Hypotheses in relation to Main School Role

Hypotheses 57 to 70.

For all other Hypotheses enumerated in the heading above, as measured by the Schools and Total Quality Management [SATQM] questionnaire and as obtained by 'Main School Role' (early childhood or primary), the F ratio indicated the probability of occurrence as being more than p=0.05, so the null hypothesis is accepted.

Hypotheses in relation to Gender

Hypotheses 71 to 84.

For all other Hypotheses enumerated in the heading above, as measured by the Schools and Total Quality Management [SATQM] questionnaire and as obtained by 'Gender' (male or female), the F ratio indicated the probability of occurrence as being more than p=0.05, so the null hypothesis is accepted.

Mean Scores SATQM

Table 167 details information relating to the subscales of the SATQM survey instrument, the various questionnaire items relating to the subscales, and the

mean scores of the questionnaire items. The implications of this table will be discussed in Chapter 5.

Table 167

SATQM Subscales, Individual Survey Items, and Mean Scores.

Subscale	SATQM Item	Mean
Deming's Point 1: Constancy of purpose	Q1	4.4762
	Q15	4.1497
	Q29	3.6667
	Q43	4.1905
Deming's Point 2: Adopt the new philosophy	Q2	4.4626
	Q16	4.0000
	Q30	4.1973
	Q44	3.5646
Deming's Point 3: Senior staff supervision	Q3	3.8912
	Q17	4.2041
	Q31	3.8027
	Q45	4.2585
Deming's Point 4: Cost minimization	Q4	3.9116
	Q18	3.7823
	Q32	3.5306
	Q46	3.4762
Deming's Point 5: Improvement in production and service	Q5	4.1497
	Q19	3.9796
	Q33	2.7959
	Q47	3.9184
Deming's Point 6: On-the-job training	Q6	4.4830
	Q20	3.4898
	Q34	3.9388
	Q48	3.7823
Deming's Point 7: Leadership	Q7	3.8776
	Q21	4.2585
	Q35	4.0136
	Q49	3.9728

Deming's Point 8: Personal empowerment	Q8	4.1225
	Q22	3.6122
	Q36	3.8640
	Q50	3.7483
Deming's Point 9: Teamwork	Q9	3.7279
	Q23	3.5035
	Q37	4.2857
	Q51	3.3742
Deming's Point 10: Artificial goals	Q10	3.2993
	Q24	2.5170
	Q38	2.4422
	Q52	3.2585
Deming's Point 11: Standards	Q11	3.2993
	Q25	3.5578
	Q39	3.2041
	Q53	3.5170
Deming's Point 12: Recognition	Q12	3.9932
	Q26	3.8503
	Q40	3.7075
	Q54	3.8571
Deming's Point 13: Professional development	Q13	4.1157
	Q27	2.9388
	Q41	4.0000
	Q55	3.6327
Deming's Point 14: Responsibility for action	Q14	4.0204
	Q28	3.8231
	Q42	4.0340
	Q56	3.6871

CHAPTER 5

DISCUSSION OF RESULTS

Introduction

This Chapter presents a discussion on the results of the analysis of the data that were gathered to inform the study.

General Findings

The general findings can be summarised as follows:

1. There was broad agreement amongst the respondents with items on the SATQM survey instrument.
2. The majority of SATQM items factored within their appropriate subscales.

3. Respondents demonstrated higher general agreement with six of Deming's Fourteen Points than with the other eight points. Those of higher agreement were: constancy of purpose; adopt the new philosophy; senior staff supervision; leadership; professional development; and responsibility for action.
4. There were only negligible differences between the results from respondents involved in the initial and follow-up study. Results of the follow-up study are reported as Appendix J.
5. Concurrent validity of SATQM factors and SLEQ factors was confirmed to some degree.
6. There were only negligible gender differences between the respondents' reactions to the questionnaire items.

Each of these general findings will now be discussed before turning to differences identified in relation to the study's hypotheses.

1. There was broad agreement amongst the respondents with the SATQM items.

There is sufficient evidence from the data that the participants involved in the study were in general agreement with a significant majority of the items contained in the Schools and Total Quality Management [SATQM] survey instrument.

Indeed, it can be seen that only four of the 56 questions had a mean score of less than three on the five-point scale. These four questions were:

- Q33. There is a reliance on the gathering of measurable data as a means to enhancing student outcomes. (Mean score of 2.7959)
- Q24. Whole school exhortations assist with the achievement of quality. (Mean score of 2.5170)
- Q38. This school believes that arbitrary performance targets contribute towards enhanced outcomes for students. (Mean score of 2.4422)
- Q27. I am solely responsible for improving my performance. (Mean score of 2.9388)

2. The majority of SATQM items factored within their appropriate subscales.

Table 1 (Chapter 3, p. 14), showed a summary of the individual items that factored with the appropriate subscales of the Schools and Total Quality Management questionnaire [SATQM]. The subscales linked directly to Deming's Fourteen Points.

Table 1 demonstrated that only five of the 56 individual items did not factor with their appropriate subscale. These items were question numbers 17, 22,

33, 40 and 45. These items, and their subscales are shown in Table 168 below:

Table 168

Summary of items that did not factor with SATQM subscales

SATQM Item	Item Detail	Deming's Point
17	I am the most important critic of my performance	3
45	Test results are the most important measure of student outcomes	3
22	I have to be careful not to make mistakes in my work	8
33	There is a reliance on the gathering of measurable data as a means to enhancing student outcomes	5
40	Others seek acknowledgement for my good work	12

It is interesting to note that two of the items (17 and 45) were intended to gather data in relation to the same subscale. This subscale related to Deming's Point three, and was to do with ceasing dependence on mass inspection. In the school context it is, in large measure, to do with senior staff supervision.

Upon examination of the four SATQM items in relation to the 'senior staff supervision' subscale, it can be seen why there may have been some confusion amongst respondents. This confusion may have been an issue that led to why two of the items (17 and 45) did not factor with the others on the same

subscale (3 and 31). The latter two (items 3 and 31) asked questions which specifically alluded to the supervisory role of senior staff, while the former two (items 17 and 45), while addressing related issues, were a little less specific. Item 17 was intended to address the senior staff issue by having respondents identify the degree to which they believed themselves to be their own most important critic, in contrast to relying on senior staff for feedback. Item 45 attempted to allude to test results being of greater significance in addressing student performance than senior staff supervision.

Though the issues are related, it appears that many respondents failed to make the connections to the degree intended by the researcher. In retrospect, such links may well have been too tenuous and a rewriting of the items may be desirable.

In assessing why item 22 did not factor with the other items that addressed SATQM subscale 8, which was to do with 'personal empowerment' (or following Deming's Point 8 as 'drive out fear'), it is apparent that item 22 was written in the negative sense, while all other items on this subscale, (numbers 8, 36 and 50), were presented in the positive. It may be that the 'making of mistakes' is not related to teacher's perceptions of 'personal empowerment'.

Item 33 related to the subscale 'improvement in production and service', and referred specifically to the role of evaluation and careful monitoring in this context. Upon re-examination of Item 33, it can be seen that there is a fundamental difference between this item and the others in the SATQM subscale, items 5, 19 and 47. Item 33 alludes overtly to enhancing student learning outcomes, while the others refer to improving overall school performance. Therefore, a modification to this item may be desirable.

As with Item 22 above, Item 40 was written as a reversal in relation to its other questions on the same subscale, items: 12, 26 and 54. All of these were written in the regular, positive form.

3. Respondents demonstrated higher general agreement with six of Deming's Fourteen Points than with the other eight points, in relation to their school's current performance.

Figure 169 below shows those items of the SATQM questionnaire that demonstrated a mean score from respondents in excess of 4.0 on the five point scale. This meant that respondents held high levels of agreement with these items listed, higher certainly than for all other survey items.

In order to assist with interpretation, SATQM subscales are shown in bold type.

Figure 169

Summary of mean scores of greater than or equal to 4.0 on SATQM subscales

SATQM Item	**Subscale** / Question Detail	Mean score
	1. Constancy of Purpose	
Q1	Improvement is constantly sought in the school's operation	4.4762
Q15	I can explain the main intentions of the school	4.1497
Q43	Constant commitment to future planning is a feature of the school	4.1905
	2. Adopt the new philosophy	
Q2	The school demonstrates a clear commitment to continuous quality improvement	4.4626
Q16	Change is regarded as an opportunity for improvement	4.0000
Q30	The school has adopted a philosophy of continuous improvement	4.1973
	3. Senior staff supervision	
Q17	I am the most important critic of my performance	4.2041
Q45	Test results are the most important measure of student outcomes	4.2585
	5. Improvement in production and service	
Q5	Effective evaluation is regarded as a key to improved performance	4.1497
	6. On-the-job training	
Q6	Professional development of staff is important in the school	4.4830
	7. Leadership	
Q21	Leadership strategies in this school are based on a supportive rather than directive culture	4.2585
Q35	In this school, senior staff help others to do their jobs better	4.0136
	8. Personal empowerment	
Q8	I'm never afraid to try new things at the school	4.1225
	9. Teamwork	
Q37	Sharing tasks is a feature of this school's operation	4.2857

	13. Professional development	
Q13	I feel personally empowered to commit to continuing education	4.1157
Q41	At this school, I am constantly acquiring new skills	4.0000
	14. Responsibility for action	
Q14	Everyone contributes towards improving the school	4.0204
Q42	All staff share responsibility for ensuring enhancements to the school's operational processes	4.0340

In relation to Deming's Fourteen Points, then, respondents indicated higher levels of agreement with their school's current performance on the following issues:

- Deming's Point 1: Constancy of purpose (three of the four items on this subscale having a mean score of >4.0);
- Deming's Point 2: Adopt the new philosophy (three of the four items on this subscale having a mean score of >4.0);
- Deming's Point 3: Senior staff supervision (two of the four items on this subscale having a mean score of >4.0);
- Deming's Point 7: Leadership (two of the four items on this subscale having a mean score of >4.0);
- Deming's Point 13: Professional development (two of the four items on this subscale having a mean score of >4.0); and
- Deming's Point 14: Responsibility for action (two of the four items on this subscale having a mean score of >4.0).

Additionally, the following SATQM subscales had one item out of the four that recorded a mean score from respondents of >4.0:

- Deming's Point 5: Improvement in production and service;
- Deming's Point 6: On-the-job training;
- Deming's Point 8: Personal empowerment; and
- Deming's Point 9: Teamwork.

This means that the following subscales on the SATQM survey instrument did not have any items out of four that attracted a mean score from respondents of >4.0:

- Deming's Point 4: Cost minimization;
- Deming's Point 10: Artificial goals;
- Deming's Point 11: Standards; and
- Deming's Point 12: Recognition.

Summary of findings based on the mean scores of SATQM subscales

In large measure, respondents agreed that their schools displayed a *constancy of purpose* for improving their school's fundamental operation, and that they have *adopted a new philosophy* based on the pursuit of continuous improvement. Furthermore, respondents agreed that there were high levels of

senior staff supervision and *leadership* in their schools, and concurred on the importance *of professional development.* However, respondents also agreed that it is the *responsibility of all* members within the school community to effect improvements to the school's operation.

Issues of slightly less agreement amongst respondents included the need for *on-the-job training* and improvements to *production and service.* Additionally, respondents indicated that they had lower levels of agreement in regard to their ability to engage in positive *teamwork* activities and their capacity to feel *personally empowered* within their work environment.

Those issues that recorded the lowest levels of agreement amongst respondents included the need to *minimize costs* and set *artificial goals* and *standards.* Respondents also expressed relatively low levels of agreement on issues relating to *professional recognition* from their colleagues.

4. There were only negligible differences between the results from respondents involved in the initial and follow-up study.

Upon analysis of the data gathered for the study with the computer program SPSS Version 9.0, 1999, it was apparent that there were no significant

differences between the data received from respondents in the initial batch of schools and those from the school involved in the follow-up study.

5. Concurrent validity of SATQM factors and SLEQ factors was proven to a significant degree.

The table that displayed the results of a principal component analysis of SATQM factors and SLEQ factors was Table 112 in Chapter 3. This analysis was completed in order to ascertain concurrent validity of the SATQM and SLEQ survey instruments.

The analysis identified six differentiating components by which the SATQM subscales and SLEQ subcales could be categorised. Most of these differentiating components included subscales from both the SATQM and SLEQ survey instruments. The subscales were grouped as follows, with Table 170 outlining the subscales that factored as Component 1.

Table 170

Concurrent validity of SATQM factors and SLEQ factors - Component 1

SATQM / SLEQ	Item	Subscale title
SATQM subscales	SATQM7	Leadership
	SATQM8	Personal empowerment
	SATQM9	Teamwork
	SATQM12	Recognition
	SATQM13	Professional development
	SATQM14	Responsibility for action
SLEQ subscales	SLEQ2	Affiliation
	SLEQ3	Professional interest
	SLEQ5	Participatory decision making
	SLEQ6	Innovation

All the above subscale titles under Component 1 could be included under a heading such as 'Continuous improvement through staff cohesion and shared responsibility'.

Subscales that factored as Component 2 are shown below in Table 171.

Table 171

Concurrent validity of SATQM factors and SLEQ factors - Component 2

SATQM / SLEQ	Item	Subscale title
SATQM subscales	SATQM1	Constancy of purpose
	SATQM2	Adopting the new philosophy
	SATQM5	Production and service
	SATQM6	On-the-job training

All the above subscale titles under Component 2 could be included under a heading such as 'Adopting a new philosophy through constant commitment to continuous improvement'.

Subscales that factored as Component 3 are shown below in Table 172.

Table 172

Concurrent validity of SATQM factors and SLEQ factors - Component 3

SATQM / SLEQ	Item	Subscale title
SATQM subscales	SATQM3	Senior staff supervision
	SATQM11	Standards
SLEQ subscale	SLEQ4	Staff freedom

All the above subscale titles under Component 3 could be included under a heading such as 'Loose / tight support for continuous improvement'. This is consistent with one of five guidelines that Fullan (1988, p. 41) highlighted for school systems. His advice was to "...understand the paradoxically simultaneous 'loose-tight' relationship...", in this instance with regard to how teachers and senior staff interact.

Subscales that factored as Component 4 are shown below in Table 173.

Table 173

Concurrent validity of SATQM factors and SLEQ factors - Component 4

SATQM / SLEQ	Item	Subscale title
SATQM subscale	SATQM4	Cost minimization
SLEQ subscales	SLEQ1	Student support
	SLEQ7	Resource adequacy

All the above subscale titles under Component 4 could be included under a heading such as 'Continuous improvement in student support through appropriate resource allocation'.

Subscales that factored as Component 5 are shown below in Table 174.

Table 174

Concurrent validity of SATQM factors and SLEQ factors - Component 5

SATQM / SLEQ	Item	Subscale title
SLEQ subscale	SLEQ8	Work pressure

As this component only had one subscale from the SLEQ questionnaire, it is perhaps unwise and unnecessary to identify a generalised statement for it. However, it is worth noting that this subscale did not factor with any other of either the SATQM or SLEQ subscales, and as such, is somewhat isolated.

Subscales that factored as Component 6 are shown below in Table 175.

Table 175

Concurrent validity of SATQM factors and SLEQ factors - Component 6

SATQM / SLEQ	Item	Subscale title
SATQM subscale	SATQM10	Artificial goals

As this component only had one subscale from the SATQM questionnaire, it is perhaps unwise and unnecessary to identify a generalised statement for it.

However, it is worth noting that this subscale did not factor with any other of either the SATQM or SLEQ subscales, and as such, is somewhat isolated.

Summary of findings from analysis of concurrent validity of SATQM factors and SLEQ factors.

There are four major components for school improvement (plus 2 minor components) identified by the analysis. They may be significant elements to take into account during any planning process that is aimed at school improvement. The four major components are:

- Continuous improvement through staff cohesion and shared responsibility;
- Adopting a new philosophy through constant commitment to continuous improvement;
- Loose / tight support, or responsibility, for continuous improvement; and
- Continuous improvement in student support through appropriate resource allocation.

6. There were only negligible gender differences between the respondents.

The analysis of the data indicated that there were no significant differences from respondents, based on their gender.

There was a number of other significant differences identified through the analysis. These were related to the various hypotheses identified in Chapter 1 and are summarised according to those hypotheses in relation to: principals, senior staff, and teachers; total number of years taught; years taught at current school; and distance from district office.

Hypotheses in relation to Principals, Senior staff and Teachers.

Hypothesis 1

There is no statistically significant difference between the mean scores on the subscale 'constancy of purpose' (as measured by the SATQM questionnaire) as obtained by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 113, 114 and 115, indicated that the mean score of teachers differed significantly from the mean score of senior staff on the 'constancy of purpose' subscale. Additionally, the analysis indicated a difference between teachers and principals in the same direction, though not at the same level of significance.

This indicates that teachers differed with senior staff, and to a lesser degree, principals, on the level of agreement over questions relating to Deming's Point One, and described in the SATQM questionnaire as 'constancy of purpose'.

Hypothesis 4

There is no statistically significant difference between the mean scores on the subscale 'cost minimization' (as measured by the SATQM questionnaire) as obtained by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 116, 117 and 118, indicated that the mean score of teachers differed significantly from the mean score of senior staff on the 'cost minimization' subscale. Additionally, the analysis indicated a difference between teachers and principals in the same direction, though not at the same level of significance.

This indicates that teachers differed with senior staff, and to a lesser degree, principals, on the level of agreement over questions relating to Deming's Point Four, and described in the SATQM questionnaire as 'cost minimization'.

Whilst it would be true that all professional stakeholders in a school's operation would be vitally concerned with ensuring that resource allocations directly affect student learning outcomes, the teacher's fundamental responsibility ends there. However, it is the further responsibility of senior staff and the principal to ensure that financial considerations beyond those directly associated with quality learning and teaching programs are carried out in an appropriate, cost efficient and effective manner. This means that utilities, cleaning equipment and materials, telephones and the like are given necessary budgetary allocations. Teachers may not necessarily recognise the essential nature of these allocations in facilitating the school's fundamental operation, and how it impacts directly on the quality of learning and teaching programs.

Hypothesis 5

There is no statistically significant difference between the mean scores on the subscale 'improvement in product and service' (as measured by the SATQM questionnaire) as obtained by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 119, 120 and 121, indicated that the mean score of teachers differed

significantly from the mean score of senior staff on the 'improvement in product and service' subscale. Additionally, the analysis indicated a difference between teachers and principals in the same direction, though not at the same level of significance.

This indicates that teachers differed with senior staff, and to a lesser degree, principals, on the level of agreement over questions relating to Deming's Point Five, and described in the SATQM questionnaire as 'improvement in product and service'.

Teachers in general are very strong in contending that their fundamental duties are about the planning, delivery and monitoring of quality learning and teaching programs, with the specific intention of enhancing student learning outcomes. Conversely, teachers would argue that it is the responsibility of the principal and his or her senior staff to effect improvements to products and services in relation to the school's operation. It would appear that principal and senior staff respondents involved in the study have shared, in significant measure, the views of differentiation as expressed by teacher respondents involved in the study.

Hypothesis 6

There is no statistically significant difference between the mean scores on the subscale 'on-the-job training' (as measured by the SATQM questionnaire) as obtained by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 122, 123 and 124, indicated that the mean score of teachers differed significantly from the mean score of principals on the 'on-the-job training' subscale. Additionally, the analysis indicated a difference between teachers and senior staff in the same direction, though not at the same level of significance.

This indicates that teachers differed with principals, and to a lesser degree, senior staff, on the level of agreement over questions relating to Deming's Point Six, and described in the SATQM questionnaire as 'on-the-job training'.

Synonymous with their basic view of their specific responsibilities, teachers have consistently expressed the view that the most effective on-the-job training activities for them are those that are directly related to their basic tasks within the classroom. These tasks are usually curriculum related and

provide specific assistance to teachers in delivering their learning and teaching programs to their students. If the training activities are not immediately, and strongly, linked in this way, they are invariably seen by teachers as having less relevance, and hence, less applicability.

Whilst it is true that principals and senior staff also seek relevance and immediate applicability in the planning and delivery of on-the-job training opportunities to be provided for teachers for whom they are responsible, they are also driven from time to time by other imperatives. These imperatives may involve aspects such as: State Government initiatives; elements of the National Statements and Profiles; Finn, Mayer or Carmichael competencies; Department of Education priorities; or issues that have been identified for priority action through the Assisted School Self Review [ASSR] process. Despite their relative worth in the generic sense, teachers may understand less the importance of these issues in comparison with other on-the-job training opportunities that directly affect their classroom work.

Hypothesis 7

There is no statistically significant difference between the mean scores on the subscale 'leadership' (as measured by the SATQM questionnaire) as obtained

by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 125, 126 and 127, indicated that the mean score of teachers differed significantly from the mean score of principals on the 'leadership' subscale. Additionally, the analysis indicated a difference between the mean scores of teachers and senior staff on the 'leadership' subscale.

This indicates that teachers differed with principals and senior staff, on the level of agreement over questions relating to Deming's Point Seven, and described in the SATQM questionnaire as 'leadership'.

It must be acknowledged here that the eleven principals that responded to the questions on the leadership subscale agreed very strongly with the items from the SATQM survey instrument. Indeed, their combined mean score was 4.6591 on the rating scale of one to five, with a standard deviation of only 0.3405. Similarly, senior staff agreed almost as strongly as their principals, with a mean score of 4.4615.

However, whilst still agreeing with the leadership subscale items on the SATQM questionnaire, teachers expressed a significantly lower mean score of 3.9256. Teachers expressed different levels of agreement on the leadership subscale than their senior staff and principal colleagues.

Hypothesis 8

There is no statistically significant difference between the mean scores on the subscale 'personal empowerment' (as measured by the SATQM questionnaire) as obtained by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 128, 129 and 130, indicated that the mean score of teachers differed significantly from the mean score of senior staff on the 'personal empowerment' subscale. Additionally, the analysis indicated a difference between teachers and principals in the same direction, though not at the same level of significance.

This indicates that teachers differed with principals, and to a lesser degree, senior staff, on the level of agreement over questions relating to Deming's

Point Eight, and described in the SATQM questionnaire as 'personal empowerment'.

The difference between the scores may be due, in some part, to the perceptions of the 'empowerer' or the 'empoweree'. In a general sense, the 'empowerers', or in this instance, the principals and senior staff, appear to hold a different view from the 'empowerees', in this case, teacher respondents. Part of the issue may relate to how a 'feeling of empowerment' actually develops, in a semantic sense. Many leaders use expressions such as: 'I will empower teaching staff'; 'staff will feel empowered'; or 'I work at empowering staff'. However, the researcher believes that such expressions allude to the core problem in the overall issue of empowerment. This problem is that people do not feel empowered because of a decree from a boss, or in the case of schools and this study, a senior staff member or principal. So the notion of 'empowering others' is, in the view of the researcher, fundamentally flawed, and could be a significant catalyst for the difference in the level of agreement between teachers, senior staff and principals involved in this study, in relation to the subscale of 'empowerment'. Rather, it is contended that it is the responsibility of leaders (principals and senior staff) to ensure that an appropriate cultural environment exists in the school, so that teachers will feel empowered themselves. In this circumstance, teachers would be more likely to 'do the

little extra things' that positively impact on the quality of student learning outcomes.

Hypothesis 10

There is no statistically significant difference between the mean scores on the subscale 'artificial goals' (as measured by the SATQM questionnaire) as obtained by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 131, 132 and 133, indicated that the mean score of teachers differed significantly from the mean score of senior staff on the 'artificial goals' subscale. Additionally, the analysis indicated a difference between teachers and principals in the same direction, though not at the same level of significance.

This indicates that teachers differed with principals, and to a lesser degree, senior staff, on the level of agreement over questions relating to Deming's Point Ten, and described in the SATQM questionnaire as 'artificial goals'.

The difference in mean scores of principals, senior staff and teachers is quite illuminating. The most surprising element of this finding to the researcher is the relatively high mean score of principals, 4.0909. This is very significantly higher than the mean score for teachers, 3.1901, with the mean score for senior staff being almost in the middle of the other two, at 3.6154.

The setting of artificial goals in the form of slogans, exhortations or work targets have never been regarded as core elements of the operation of successful schools. Indeed, this is one of Deming's Fourteen Points that would appear to have little applicability in the school setting.

Hypothesis 12

There is no statistically significant difference between the mean scores on the subscale 'recognition' (as measured by the SATQM questionnaire) as obtained by 'major role in the school' (principals, senior staff and teachers), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 134, 135 and 136, indicated that the mean score of teachers differed significantly from the mean score of senior staff on the 'recognition' subscale.

Additionally, the analysis indicated a difference between teachers and principals in the same direction, though not at the same level of significance.

This indicates that teachers differed with principals, and to a lesser degree, senior staff, on the level of agreement over questions relating to Deming's Point Twelve, and described in the SATQM questionnaire as 'recognition'.

Even though the Scheffe Post Hoc Procedure, Table 136, did not indicate where specific difference existed, a perusal of the relative mean scores, as observed in Table 134, indicates some differences. The mean score for principals and senior staff were very high, 4.3333 and 4.2821 respectively, while the mean score for teachers was somewhat lower at 3.8127.

The issue that this point addresses was about professional recognition, where barriers to pride in workmanship is eliminated. It is interesting to note that the principal and senior staff respondents in this study recorded higher mean scores than their teacher colleagues. Does this mean that some senior staff and principals have been accepting credit for some of their teachers acknowledged good work?

Hypotheses in relation to Total Number of Years Taught

Hypothesis 17

There is no statistically significant difference between the mean scores on the subscale 'senior staff supervision' (as measured by the SATQM questionnaire) as obtained by 'total number of years taught' (less than one year, one to three years, four to ten years, and more than ten years), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 137, 138 and 139, did not indicate where specific difference existed. However, an examination of the mean scores displayed in Table 137 suggests that the respondents with less than three years experience seemed less certain about questions related to the subscale 'senior staff supervision' when compared with respondents with three to ten, eleven to twenty, or more than twenty years experience.

This indicates that the least experienced teachers differed with teachers with more that three years experience, on the level of agreement over questions relating to Deming's Point Three, and described in the SATQM questionnaire as 'senior staff supervision'.

It is highly likely that teachers with less than three year's experience would require a different level of support and supervision from senior staff than teachers with more than three year's experience. This may explain, in some measure, why they had developed a different view of what senior staff supervision should be like.

Hypothesis 18

There is no statistically significant difference between the mean scores on the subscale 'cost minimization' (as measured by the SATQM questionnaire) as obtained by 'total number of years taught' (less than one year, one to three yearsfour to ten years, and more than ten years), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 140, 141 and 142, did not indicate where specific difference existed. However, an examination of the mean scores displayed in Table 140 suggested that the respondents with less than three years experience seemed less certain about questions related to the subscale 'cost minimization' when compared with respondents with three to ten, eleven to twenty, or more than twenty years experience.

This indicated that the least experienced teachers (those with less than three years experience) differed with teachers with more that three year's experience, on the level of agreement over questions relating to Deming's Point Four, and described in the SATQM questionnaire as 'cost minimization'.

This finding may indicate that those teachers with less than three year's total teaching experience were less certain about issues relating to minimizing costs in regard to their teaching responsibilities. Other teachers with three to ten, eleven to twenty years and more than twenty years experience appeared more certain about issues relating to cost minimization.

Hypothesis 22

There is no statistically significant difference between the mean scores on the subscale 'personal empowerment' (as measured by the SATQM questionnaire) as obtained by 'total number of years taught' (less than one year, one to three years, four to ten years, and more than ten years), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 143, 144 and 145, did not indicate where specific difference existed. However, an examination of the mean scores displayed in Table 143

suggested that the respondents with less than three years experience seemed less certain about questions related to the subscale 'personal empowerment' when compared with respondents with three to ten, eleven to twenty, or more than twenty year's experience.

This indicated that the teachers with less than three year's experience differed from teachers with more that three year's experience, on the level of agreement over questions relating to Deming's Point Four, and described in the SATQM questionnaire as 'personal empowerment'.

This could be due to the fact that those teachers with less than three year's total teaching experience were less certain about issues pertaining to personal empowerment in regard to their teaching responsibilities. Other teachers with three to ten, eleven to twenty years and more than twenty years experience appeared more certain about issues relating to personal empowerment.

Hypotheses in relation to Years Taught at Current School

Hypothesis 32

There is no statistically significant difference between the mean scores on the subscale 'cost minimization' (as measured by the SATQM questionnaire) as obtained by 'total years taught at current school' (less than one year, one to

three years, four to ten years, and more than ten years), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 146, 147 and 148, indicated where specific difference existed. The results indicated that the respondents with four to ten year's experience at their current school on the subscale 'cost minimization' differed with the mean scores of respondents with less than one year's experience at their current school.

This finding indicates that the teachers with four to ten year's experience differed from teachers with less than one year's experience on the level of agreement over questions relating to Deming's Point Four, and described in the SATQM questionnaire as 'cost minimization'.

While it is understandable that teachers with less than one year's experience would be likely to be the least clear about issues relating to cost minimization, it is less clear why the only group where significant difference was apparent was with teachers of four to ten year's experience. A logical assumption would have been that teachers with less than one year's experience at their

current school may have differed with teachers with one to three and more than eleven year's experience as well.

Hypothesis 35

There is no statistically significant difference between the mean scores on the subscale 'leadership' (as measured by the SATQM questionnaire) as obtained by 'total years taught at current school' (less than one year, one to three years, four to ten years, and more than ten years), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 149, 150 and 151, indicated where specific difference existed. The results indicated that the respondents with one to three year's experience at their current school on the subscale 'leadership' differed with the mean scores of respondents with four to ten year's experience at their current school.

This finding indicates that the teachers with one to three year's experience differed from teachers with four to ten year's experience on the level of agreement over questions relating to Deming's Point Seven, and described in the SATQM questionnaire as 'leadership'. Essentially, teachers with one to three year's experience held a different view of leadership than their

colleagues with four to ten year's experience. It is also significant that teachers with less than one year's teaching experience at their current school did not differ significantly from their colleagues with more than eleven year's experience.

One possible explanation for this finding could be that teachers in their first year at their current school are fundamentally satisfied with assimilating with the new school culture and 'learning the ropes'. Another explanation could be that teachers with more than eleven year's experience at their current school may become blasé, or take little account of leadership directions within the school. These highly experienced teachers may have ceased personal commitment to providing leadership, as well as responding to it. Furthermore, this finding may mean that the most vital years for teachers in terms of leadership within their school are when they have been there for between one and ten years. This may be the period when they are most vibrant, honest and participatory.

Hypothesis 37

There is no statistically significant difference between the mean scores on the subscale 'teamwork' (as measured by the SATQM questionnaire) as obtained

by 'total years taught at current school' (less than one year, one to three years, four to ten years, and more than ten years), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 152, 153 and 154, indicated where specific difference existed. The results indicated that the respondents with four to ten year's experience at their current school on the subscale 'teamwork' differed with the mean scores of respondents with one to three year's experience at their current school.

This finding indicates that the teachers with one to three year's experience differed from teachers with four to ten year's experience on the level of agreement over questions relating to Deming's Point Nine, and described in the SATQM questionnaire as 'teamwork'.

One possible explanation for this finding may be that teachers with four to ten year's experience at their current school hold a different view on 'teamwork' than their colleagues with one to three year's experience. These staff with four to ten year's experience may be more comfortable in the school environment, perhaps due to their greater time there. Another possible explanation may be that they have decided that they would prefer not to have the same involvement in teamwork situations.

Hypothesis 40

There is no statistically significant difference between the mean scores on the subscale 'recognition' (as measured by the SATQM questionnaire) as obtained by 'total years taught at current school' (less than one year, one to three years, four to ten years, and more than ten years), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 155, 156 and 157, indicated where specific difference existed. The results indicated that the respondents with four to ten year's experience at their current school on the subscale 'recognition' differed with the mean scores of respondents with one to three year's experience at their current school.

This meant that the teachers with one to three year's experience differed from teachers with four to ten year's experience on the level of agreement over questions relating to Deming's Point Twelve, and described in the SATQM questionnaire as 'recognition'.

An examination of Table 155 will indicate that teachers with four to ten year's experience at their current school recorded a mean score of 4.0383, while those with one to three year's experience had a mean score of only 3.6589, on

the subscale 'recognition'. A possible reason for this finding may be that, largely because of their greater period of time at the school, those with four to ten year's experience have been able to eliminate, in larger measure, barriers to their pride in workmanship. Perhaps their longer opportunity to contribute, through having been at the school for a longer period of time, may have given them a better sense of recognition of their contributions.

Hypotheses in relation to Distance from District Office

Hypothesis 46

There is no statistically significant difference between the mean scores on the subscale 'cost minimization' (as measured by the SATQM questionnaire) as obtained by 'distance from district office' (less than ten kilometres, ten to twenty kilometres, twenty-one to fifty kilometres, and more than fifty kilometres), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 158, 159 and 160, indicated where specific difference existed. The results indicated that the mean scores of respondents whose school was less than ten kilometres from District Office differed on the subscale 'cost minimization' from the mean scores of respondents whose school was ten to twenty kilometres from District Office. A similar difference also existed

between the mean scores of respondents whose school was less than ten kilometres from District Office (3.5361), on the subscale 'cost minimization', from the mean scores of respondents whose school was twenty to fifty (3.7375), and more than fifty kilometres (3.8611) from District Office, though not to the 0.05 level of significance.

This finding indicates that the teachers whose school was less than ten kilometres from District Office held a different view about 'cost minimization' from respondents whose school was more than ten kilometres from District Office. Therefore, the level of agreement over questions relating to Deming's Point Four, and described in the SATQM questionnaire as 'cost minimization', was significantly different.

Teachers whose schools are increasingly distant from District Office are clearly aware of the differential costs involved in them carrying out their fundamental teaching duties. Some of the differences would include: the extra cost of getting to their work environment, as a high percentage of teachers in school locations distant from major population centres choose to travel daily; extra costs of having materials and equipment delivered, again increasing the farther the school is from population centres; extra time and costs associated with attending accredited or non-accredited professional learning

opportunities; extra time and costs associated with students participating in extra-curricular activities such as sporting rosters and cultural experiences; extra costs of school excursions and camps, due in large measure to extra travelling costs; and surcharges for building or general maintenance requirements, due to geographical factors.

Hypothesis 51

There is no statistically significant difference between the mean scores on the subscale 'teamwork' (as measured by the SATQM questionnaire) as obtained by 'distance from district office' (less than ten kilometres, ten to twenty kilometres, twenty-one to fifty kilometres, and more than fifty kilometres), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 161, 162 and 163, did not indicate where specific difference existed. However, an examination of Table 161 indicated that the mean scores of respondents whose school was twenty-one to fifty kilometres (3.3500) from District Office differed on the subscale 'teamwork' from the mean scores of respondents whose school was less than ten kilometres (3.771), ten to twenty kilometres (3.8300), and more than fifty kilometres (3.7083) from district Office, although not at the 0.05 level of confidence.

Hypothesis 52

There is no statistically significant difference between the mean scores on the subscale 'artificial goals' (as measured by the SATQM questionnaire) as obtained by 'distance from district office' (less than ten kilometres, ten to twenty kilometres, twenty-one to fifty kilometres, and more than fifty kilometres), at the 0.05 level of confidence.

This null hypothesis is rejected. The analysis of the data, and as evidenced by Tables 164, 165 and 166, indicated that the mean scores of respondents whose school was ten to twenty kilometres from District Office differed on the subscale 'artificial goals' from the mean scores of respondents whose school was more than fifty kilometres from district Office. Although not at the 0.05 level of confidence, Table 164 also demonstrated a difference in the mean scores of respondents whose school was more than fifty kilometres from district office than from respondents whose school was less than ten kilometres or twenty-one to fifty kilometres from District Office.

Summary of SATQM items for which the null hypothesis was rejected

Table 176 provides a summary of all the hypotheses for which the null hypothesis was rejected.

Table 176

Summary of SATQM items for which the null hypothesis was rejected

Deming's Point (SATQM Subscales)	Issues for Hypothesis (number in parentheses)					
	Formal Role	Total years taught	Years current school	Dist-ance to DO	Teach area	Gender
1. Constancy of purpose	1		29			
2. Adopt the new philosophy			30			
3. Senior staff supervision		17	31			
4. Cost minimization	4	18		46		
5. Production and service	5	19	33			
6. On-the-job training	6	20	34			
7. Leadership	7	21	35			
8. Personal empowerment	8					
9. Teamwork			37	51		
10. Artificial goals	10			52		
11. Standards						
12. Recognition	12		40			
13. Professional development						
14. Responsibility for action						

Other Hypotheses

For all other hypotheses, the null hypothesis is confirmed by the data analysis and is, therefore, accepted. Included here are all the hypotheses in relation to 'teaching area' and 'gender'. These hypotheses are as outlined in the Table 177.

Table 177

Summary of items for which the null hypothesis was accepted

Deming's Point (SATQM Subscales)	Issues for Hypothesis (number in parentheses)					
	Formal Role	Total years taught	Years current school	Dist-ance to DO	Teach area	Gender
1. Constancy of purpose		15		43	57	71
2. Adopt the new philosophy	2	16		44	58	72
3. Senior staff supervision	3			45	59	73
4. Cost minimization			32		60	74
5. Production and service				47	61	75
6. On-the-job training				48	62	76
7. Leadership				49	63	77
8. Personal empowerment		22	36	50	64	78
9. Teamwork	9	23			65	79
10. Artificial goals		24	38		66	80
11. Standards	11	25	39	53	67	81
12. Recognition		26		54	68	82
13. Professional development	13	27	41	55	69	83
14. Responsibility for action	14	28	42	56	70	84

CHAPTER 6

CONCLUSION

Introduction

This Chapter presents a discussion on some comparisons between the findings from this study and findings in related studies. The results and findings will be interpreted and implications of the study will be explored. The Chapter is organised under the subheadings of general findings, specific findings, other findings, and comparative findings. The Chapter also details some interpretation of results, makes findings and recommendations for further study, and details some conclusions.

General Findings

The results of this study indicated that there were six general findings:

1. There was broad agreement amongst the respondents with items on the SATQM survey instrument.
2. The majority of SATQM items factored within their predicted subscales.
3. Respondents demonstrated higher general agreement with six of Deming's Fourteen Points than with the other eight points. Those of higher agreement were: constancy of purpose; adopt the new philosophy; senior staff supervision; leadership; professional development; and, responsibility for action.
4. There were only negligible differences between the results from respondents involved in the initial and follow-up studies.
5. Concurrent validity of SATQM factors and SLEQ factors was confirmed.
6. There were only negligible gender differences between the respondents.

These six general findings were explored in Chapter 5.

Specific Findings

There were a number of more specific findings that emanated from individual hypotheses. These can be listed as follows:

1. Teachers and senior staff, and to a lesser degree, principals, differed on a number of subscales, with teachers not being as strongly in agreement as the other roles:
   1.1. 'constancy of purpose' subscale. (Hypothesis 1);
   1.2. 'cost minimization' subscale. (Hypothesis 4);
   1.3. 'improvement in production and service' subscale. (Hypothesis 5); and
   1.4. 'personal empowerment' subscale. (Hypothesis 8)
2. Teachers and principals, and to a lesser degree, senior staff', differed on the 'on-the-job training' subscale. (Hypothesis 6)
3. Principals and teachers, and to a lesser degree senior staff, differed on the 'leadership' subscale. (Hypothesis 7)
4. Teachers and principals, and to a lesser degree, senior staff, differed on the 'artificial goals' subscale. (Hypothesis 10)
5. Teachers differed with principals and senior staff on the 'recognition' subscale, though not at the 0.05 level of significance. (Hypothesis 12)
6. Teachers with less than three years experience appeared less certain about several subscales than did their more experienced colleagues. These were:
   6.1. the 'senior staff supervision' (Hypothesis 17);
   6.2. the 'cost minimization' (Hypothesis 18); and
   6.3. the 'personal empowerment' (Hypothesis 22).

7. Teachers with four to ten year's experience at their current school differed from teachers with less than one year's experience, on the 'cost minimization' subscale. (Hypothesis 32)
8. Teachers with one to three year's experience at their current school differed from teachers with four to ten years experience, on the 'leadership' subscale. (Hypothesis 35)
9. Teachers with four to ten year's experience at their current school differed from teachers with less than one year's experience, on the 'teamwork' subscale. (Hypothesis 37)
10. Teachers with four to ten year's experience at their current school differed from teachers with less than one year's experience, on the 'recognition' subscale. (Hypothesis 40)
11. Teachers whose school was within ten kilometres from district office differed on the 'cost minimization' subscale from teachers whose school was ten to twenty kilometres, and to a lesser degree, a greater distance from district office. (Hypothesis 46)
12. Teachers whose school was in excess of fifty kilometres from district office differed on the 'teamwork' scale from teachers whose school was closer to district office, though not to the 0.05 level of significance. (Hypothesis 51)

13. Teachers whose school was ten to twenty kilometres from district office differed on the 'artificial goals' subscale from teachers whose school was in excess of fifty kilometres from district office. (Hypothesis 52)

Other Findings

Other interesting findings emanated from an examination of the various tables that were developed from the results of the study. These included:

1. Cost minimization subscale. Although all four questions related to this subscale factored, there were some interesting results, somewhat consistent with Holmes et al. (1993). In all instances, the percentage of 'unsure' responses was high: 17.4%, 18.5%, 36.6% and 46.9%. In the final instance, the 'unsure' element was the highest of all responses. Essentially, staff know little about their school's purchasing policies.
2. On-the-job training. SATQM question 20 ('In this school, on-the-job training methods relate directly to the staff member's core tasks') received a mixed range of responses: 12.4% strongly agreed, 39.3% agreed, 34.5% were unsure, and 13.8% disagreed. This was probably due to a mixed understanding of the question's intent, and calls into question the value of retaining this item in further uses of the SATQM questionnaire.
3. Leadership. A concerning 8.2% of respondents disagreed with SATQM item 7: 'The school's leaders are keen to help staff improve'. An identical

percentage disagreed with the Q35 contention that 'In this school, senior staff help others to do their jobs better', and 9% disagreed that 'If I need help, I can go confidently to a senior staff member'. It is a quite significant fact that one in eleven teachers seem alienated from leadership.

4. Teamwork. SATQM item 51, 'This school discourages organisational factors which may inhibit quality outcomes', received a mixed response, with a majority of respondents (52.8%) being either unsure or disagreeing with the question. It is suggested that the fault lay with the question, which warrants changing.
5. Artificial goals. Consistent with Holmes (1993), most questions that formed the four SATQM items about 'artificial goals' received mixed reactions from respondents. The degree to which this Deming area has a place in schools is debatable and somewhat problematic. A large 52% disagreed with, or were unsure about question 10, ('The school utilises motivational slogans as a means to effect improvements'), a massive 88.9% disagreed with, or were unsure about question 24 ('Whole school exhortations assist with the achievement of quality'); and only 11.8% of respondents agreed with SATQM item 38: 'This school believes that arbitrary performance targets contribute towards enhanced outcomes for students'. This calls into question the relevance of this SATQM subscale in respect of schools.

6. Standards. Each of the questions on the 'standards' subscale attracted mixed responses from participants. Each had a high score of 'unsure', ranging from 18.8% to 25%, while disagreement ranged from 15.3% to 29.7%. Clearly, respondents were cautious about questions alluding to work standards, which is somewhat foreign to their usual working domains.
7. Professional development. SATQM item 27, 'I am solely responsible for improving my performance', received mixed responses, which was out of character with other questions on this subscale. Disagreement was ventured by 48.6% of respondents, while 38.3% agreed. The word 'solely' may have proven problematic, and perhaps could be removed from future SATQM questionnaires.
8. Responsibility for action. The 'responsibility for action' subscale referred to the need for everyone to become actively involved in effecting any organisational transformation. A surprising 11.7%, (SATQM 14: 'Everyone contributes towards improving the school'), 13% (SATQM 28: 'Not all staff are required to improve in the school'), 6.2% (SATQM 42: 'All staff share responsibility for ensuring enhancements to the school's operational processes') and 11.6% (SATQM 56: 'Senior staff are predominantly responsible for school improvement') disagreed with the assertions forming the subscale.

9. Highest levels of agreement with SATQM items. Table 169 on page 209 revealed mean scores of greater than or equal to 4.0 on SATQM subscales. This table indicated that the highest rating subscales, in terms of respondents' levels of agreement with questions, were:

    1. Constancy of purpose;
    2. Adopt the new philosophy;
    3. Senior staff supervision;
    7. Leadership;
    13. Professional development;
    14. Responsibility for action; with reduced support for
    5. Improvement in production and service;
    6. On-the-job training;
    8. Personal empowerment; and
    9. Teamwork.

    Cost minimization, artificial goals, standards, and recognition did not demonstrate a mean score greater than or equal to 4.0.

10. Summary of findings based on the mean scores of SATQM subscales

    In large measure, respondents agreed that their schools displayed a *constancy of purpose* for improving their school's fundamental operation, and that they have *adopted a new philosophy* based on the pursuit of continuous improvement. Furthermore, respondents agreed that there

were high levels of *senior staff supervision* and *leadership* in their schools, and concurred on the importance *of professional development.* However, respondents also agreed that it is the *responsibility of all* members within the school community to effect improvements to the school's operation. Issues of slightly less agreement amongst respondents included the need for *on-the-job training* and improvements to *production and service.* Additionally, respondents indicated that they had lower levels of agreement in regard to their ability to engage in positive *teamwork* activities and their capacity to feel *personally empowered* within their work environment. Those issues that recorded the lowest levels of agreement amongst respondents included the need to *minimize costs* and set *artificial goals* and *standards.* Respondents also expressed relatively low levels of agreement on issues relating to *professional recognition* from their colleagues. (My emphasis)

11. Summary of findings from analysis of concurrent validity of SATQM factors and SLEQ factors.

Table 112 on page 163 indicated that there were four major components for school improvement (plus 2 minor components) identified by the analysis. They may be significant elements to take into account during any planning process that is aimed at school improvement. The four major components are:

- Continuous improvement through staff cohesion and shared responsibility;
- Adopting a new philosophy through constant commitment to continuous improvement;
- Loose / tight support, or responsibility, for continuous improvement; and
- Continuous improvement in student support through appropriate resource allocation.

Comparative Findings

While the literature review in this research was used mainly to study TQM and develop a questionnaire based on its elements for use in schools, there was a dearth of research material available from school settings upon which to draw comparisons with this study. However, following are two appropriate research studies.

1. Development of measuring instrument based on Deming's Fourteen Points

   Holmes et al. (1993) described the process by which a survey instrument was developed based on the baseline conceptualization of Deming's Fourteen Points, as presented by Bonstingl (1992). A similar methodology

was utilised to that adopted in the development of the SATQM instrument. The findings from Holmes et al. included:

- the instrument demonstrated overall instrument reliability;
- two subscales (senior staff supervision - Deming's Point three, and artificial goals - Deming's Point ten) require further development in order to strengthen differentiation. As House et al. (1993, p. 8) observed, "...educators, especially teachers, are generally mixed in regard to their feelings about testing, testing programs, and numerical measurement schemes of any variety". This view is strongly in line with the opinions of the researcher in this SATQM study;
- the 'cost minimization' subscale was to be discarded due to public schools invariably being forced to adopt lowest bidder mentality;
- some of the items with 'or' choices may have contributed to the lower correlation coefficient of those items; and
- the instrument had wide applicability, an assertion equally relevant to the SATQM questionnaire.

2. Redesign of educational administration preparation programs.

House (1992) presented a paper that explored the TQM teachings of Deming as a basis for the redesign of educational administration preparation programs.

Discussion was based on the National Commission for the Principalship's performance domains, which are included as Appendix I.

Generally, House (1992) indicated that preparation programs ought to be designed around four main domains: leadership (see leadership attributes, Figure 4, p. 70); information collection and usage, which for students means (p. 12) "... raising the mean of achievement while reducing variation"; staff development, where everyone should be (p. 12) "... involved in a continuous program of learning and self-improvement. This increases their ability to contribute through improvement and innovation to the school, to the community, and to society"; and motivating others to feel part of the group and ensuring that trust and teamwork develop.

After analysis of the results from all the subscales, House (1994) indicated that ten revealed acceptable alpha scores. These subscales were: 1, 2, 5, 6, 7, 8, 9, 11, 12, and 13. Analysis of the SATQM questionnaire results revealed acceptable scores for all subscales. The assertions of House (1992) could benefit from further study.

Interpretation of Results/Findings

1. Years at Current School

One of the interesting findings of this study relates to the issue of years of experience of respondents in their current school. In all instances where a significant difference was evident, this difference showed up between those with one to three year's experience at their current school and their colleagues with four to ten year's experience at their current school. Does this tend to indicate that these are the optimum range of years for teachers to be at a school? Are teachers most honest, productive and participatory during these years? This may be an issue to be pursued through further study.

2. Responsibility for improving performance

The 27th item from the SATQM questionnaire, (Q27. 'I am solely responsible for improving my performance') was rated by respondents as evidencing a relatively lower level of agreement than other questions. It is assumed that the word 'solely' in the question may have been significantly responsible for the lower rating. Respondents have most probably assumed that others share responsibility for improving their performance: others such as principals, other senior staff, other non-school departmental officers, and teaching colleagues. It is suggested that further study using SATQM delete the word 'solely' from this item.

Recommendations for future research

1. Pre-training

Mulligan (1992) reported that in the USA, Virginia's Department of Education was sufficiently committed to the educational applicability of Deming's quality management techniques that they received a federal grant to provide quality management training and ongoing support to test the idea. One of the schools engaged actively in the program was McAuliffe, the entire staff of which underwent a business-style, four-day quality training program, which had three basic threads:

1. interactive skills. How to initiate, react to, and clarify ideas.
2. problem solving skills. How to identify and analyse problems, collect and display appropriate data, and select, implement, and evaluate solution.
3. the quality improvement process. How to identify the 'customers' and the product or service that represents 'output'; how to plan, organise, and monitor for quality" (1992, p. 2-3).

Clearly, this model requires significant commitment and support from the employing authority, as well as from school personnel. This would be a considerable challenge for a school and system in Tasmania, but it would appear that the ultimate success of the model would rely on such a commitment. The model also requires a functional transformation of the

leaders' roles within the school, another significant barrier in the context of today's Tasmanian schools.

3. The ASSR Process

SATQM Item 33 was one question that did not factor with Deming's Fourteen Points ('There is a reliance on the gathering of measurable data as a means to enhancing student outcomes'). This question alludes to the link between the gathering of measurable data as a strategy for enhancing learning outcomes for children. This is consistent with the findings of Schmoker (1996), who criticised schools for failing to develop rigorous programs for monitoring student progress.

However, it is not surprising that participants in the study scored this item relatively lower than the majority of other items. At the time that the data gathering phase of the study was undertaken, following Schmoker (1996), it could be argued that members of the teaching service in Tasmanian primary schools were less reliant on measurable data to inform them about the nature and level of student learning. However, since that time, it could be proposed that here has been a significant shift in teacher's acceptance of the benefits of using measurable data to implicate learning opportunities and outcomes.

Indeed, a critical initiative in Tasmanian primary schools that has led to this shift has been the Assisted School Self Review [ASSR] process. This process has been undertaken by all Tasmanian primary schools between 1997 and 1999 inclusive. It is a process designed to involve all key stakeholders in the planning program, clarify existing practice including the celebration of good things, and describe future pathways forward. It is about setting priorities that match identified needs, whilst taking cognizance of the unique nature of each school and its community.

Through this ASSR process, primary school teachers have become more acutely aware of the link between the gathering and study of measurable data, and enhancement of student learning outcomes. Schmoker (1996, p. 115) is quite explicit:

> We have launched initiatives, provided loads of staff development in certain methods and spent untold hours drawing up visions and mission statements. All had enormous promise. But these symbolic, high profile 'initiatives de jour' occurred in the near absence of any written or explicit intention to monitor, adjust, and thus palpably increase student learning or achievement. The combination of three concepts constitutes the foundation for results:
> - meaningful team work
> - clear measurable goals
> - regular collection and analysis of performance data.

It would be valuable to see whether the exposure to the ASSR process over the last three years has resulted in a shift of primary teacher opinion in relation to the degree to which they rely on the gathering of measurable data as a means of enhancing student outcomes. Running the SATQM survey instrument again could be one means by which this contextual change in Tasmanian schools could be tested.

Similarly, the third SATQM question, (Q38. 'This school believes that arbitrary performance targets contribute towards enhanced outcomes for students'), alluded to performance targets as a factor in enhancing learning outcomes for students. This raises a somewhat similar issue as the first question and, as such, it is not surprising that many of the teacher respondents did not rate it as highly as they did other questions. As with the first question, it would be valuable to ascertain the degree to which teacher opinions may have changed as a direct result of participating in the ASSR process, of which target setting is an integral and mandatory feature.

4. Teacher's assessment of the quality of their schools

Teachers' assessment of the quality of their schools is an area where there is a relative dearth of research, hence the decision to try to redress the imbalance through this study.

Davis (1994) also conducted research into teacher's perceptions of the quality of their schools, because (p. 1) "teachers are the people who would be directly involved in creating, implementing, and supporting the components of Total Quality Education...". The measurement instrument involved in this research, the Quality Schools Survey Questionnaire, included eight subscales: leadership; mission; expectations; time on task; monitoring; basic skills; climate; and parent/community participation.

The sample of respondents was small (38), though 79% of those invited to participate chose to. The study pointed to the need for further research, using a larger sample, but indicated, at the very least, that the eight quality school characteristics were being implemented in significant manner at their schools. More published studies on teachers assessment of the quality of their schools, especially those focussing on TQM, should be encouraged,

Conclusions

1. The SATQM questionnaire received strong agreement from the respondents involved in the study.
2. Teachers and senior staff (including principals) differed on eight of the fourteen constructs measured by the SATQM questionnaire: 'constancy of

purpose'; 'cost minimization'; 'improvement in production and service'; on-the-job training'; 'leadership'; 'personal empowerment'; 'artificial goals'; and 'recognition', with teachers being less in agreement than other roles.

3. Teachers with less than three years experience appeared less certain about the 'senior staff supervision', 'personal empowerment' and 'cost minimization' subscales than did their more experienced colleagues.
4. Despite the strong acceptance of the SATQM measurement instrument, it is worth recognising the limitations of applying TQM techniques to schools due to the fact that schools are not merely money-making concerns. Tribus' (1992) list of differences between industry and education is useful in this context.
5. Deming's theory is based heavily on the need for management to be actively engaged in the quality process and requires an holistic understanding. This base has proven useful for application to schools.
6. Holt (1993, p. 385) saw "... the pursuit of quality as a moral enterprise, something good to do". As good schooling ought to be fundamentally about doing 'something good', there could be no greater imperative for introducing quality principles into the culture of schools.
7. The Mulligan (1992) research provided a clear reminder of the importance of the provision of appropriate training procedures in instituting quality management procedures in schools. The need for 'system' support is also

highlighted in Mulligan's work. However, given the degree to which financial responsibility has been devolved to schools, assistance of this nature within the Tasmanian government school system would be highly problematic.

8. If the change process is to be implemented in schools, it is cogent to take account of Bishop and Mulford's (1999) warning about the possibly adversarial affects of centrally-imposed change.

Concluding remarks

Berliner (1984) alluded to the conflicting pessimistic and optimistic viewpoints with respect to a glass with fluid at the midpoint: the former regards it as 'half empty', whilst the latter regards it as 'half full'. Despite the undoubted accuracy of the two opinions, Berliner (1984) indicated that they reflect "... vastly different beliefs and actions" (p. 51). It is hoped that readers will, on balance, view the results of this study with optimism, as the potential for Deming's management theory, as specifically articulated by Deming's Fourteen Points, has the capacity to positively influence quality management processes in schools.

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APPENDICES

APPENDIX A

Teacher Development
Centre for Advanced Teaching Studies

2 Edward Street Glebe 7000
GPO Box 1347 Hobart
Tasmania Australia 7001
Telephone: (002) 30 7979
Facsimile: (002) 31 2885

CR

Education & the Arts

Reference:

15 September 1993

Contact:

Mr Neville Grady
University of Tasmania at Launceston
PO Box 1214
LAUNCESTON 7250

Dear Neville

Implications of applying the principle of total quality management to schools

I have been advised by the Consultative Research Committee that the above research study adheres to the guidelines that have been established and there is no objection, based on administrative considerations, to the study proceeding.

A copy of the final report of your study should be forwarded to John Kitt, Superintendent (Teacher Development), Centre for Advanced Teaching Studies, GPO Box 1347, Hobart 7001.

My permission is given to conduct the research study provided that the Principal of each school is willing for the school to be involved.

Yours sincerely

(SGD)
GP HARRINGTON

G Harrington
Deputy Secretary (Education)

cc. District Superintendents
Anne Ford
Consultative Research Committee

APPENDIX B

2 Allison Avenue
RIVERSIDE TAS 7250

3 December, 1994

Dear *(principal)*

Thank you for your positive response to my contact regarding some staff from your school being involved in my research. Your support and assistance is greatly appreciated.

I thought it may be useful to provide some further information, as well as to expand on what it is that I'm seeking to research, and how I'm planning to go about it.

I enrolled as a student in the University of Tasmania's Faculty of Education Master of Education by Research program in 1991, but didn't settle finally on my actual topic until 1992. My supervisor is Dr Neville Grady.

I am investigating the nature of, and links between,

- teachers' perceptions of the degree to which their school is utilizing the principles of Total Quality Management, as evidenced by their application of Deming's Fourteen Points
- those teachers' perceptions of their school's organizational climate, and
- the metaphorical images those teachers hold of their school.

The details of my study have been submitted to the University's Ethics Committee, and permission to conduct research in government schools has been sought and approved from Graham Harrington, Deputy Secretary of The Department of Education and The Arts.

I am now seeking the co-operation of school personnel in order to gather data to inform the work. I am very conscious of the demands placed on school principals and teachers, and have consequently designed the study so that imposts on people who choose to be involved will be as minimal as possible, whilst maintaining consistency with good research practice.

Specifically, I am asking a sample of teachers from K-6 to do three things:

1. complete the **Personal Data Form**, enclosed,
2. complete the questionnaire Schools and Total Quality Management (**SATQM**), an instrument being developed for this study. Currently, SATQM contains 56 items requiring responses of the Strongly Agree-Strongly Disagree type. For example, teachers are asked to respond to such items as "I understand, and can explain, the main intentions of the school" and "Sharing tasks is a feature of this school's operation".
3. complete the Actual form of the Fisher and Fraser instrument called School Level Environment Questionnaire (**SLEQ**). This has been used quite widely in Tasmania and elsewhere and each of the questionnaires contains 56 items, which again, require responses of the Strongly Agree-Strongly Disagree type. For example, teachers are asked to respond to statements such as "Most students are helpful and co-operative to teachers" and "There is constant pressure to keep working".

Teachers will not have to identify themselves, as it is not planned to have to conduct interviews, nor will they need to be involved in scoring the questionnaires. There will not be any costs in terms of photocopying or postage to be borne by the school or participants.

In order to preserve the anonymity of the respondents I ask you, as principal, to distribute packages to volunteer teachers and ask them to return the completed questionnaires direct to me in reply-paid envelopes, or in the case of schools within the Launceston area, I may be able to collect them personally.

In terms of the selection process of volunteer teachers, it would be appreciated if you could make your selections in a balanced way according to the following criteria:

- **teaching experience** - variety of ages, years of teaching (total, and at this school), and number of teaching locations,
- **gender** - mix of male and female, and
- **level of teaching expertise** - variety of primary, early childhood, specialist. You are most welcome to be one of the respondents.

Some principals may wish to involve their whole school in all or part of my project as part of its professional development and school planning requirements. If this is the case, I would welcome discussion on the matter.

I am excited about the potential of this study to inform the future development of primary schools, and from this point of view, I ask that you arrange the distribution of packages to volunteers as soon as possible. Similarly, as it is likely that data analysis is likely to take some time, it would be appreciated if you could encourage respondents to complete and return the package with minimal delay. I do appreciate your assistance in this regard.

Following data analysis, which I anticipate being sometime later this year, I hope that dissemination of generalized findings will be possible before the end of 1994. Of course, neither particular schools nor individuals will be identified in the dissemination process.

Thank you again for your tolerance and assistance to this stage, and I am hopeful of there being some educationally worthwhile outcomes for you from the project.

If you have any further queries, please feel free to contact me on (003) 362582 (work), (003) 272496 (home), or by fax on (003) 345320.

Thank you in anticipation.

Yours sincerely

John Laing

APPENDIX C

APPENDIX C

Items selected for inclusion in the Schools and Total Quality Management (SATQM) survey instrument.

Deming's Point 1: Constancy of Purpose (Create constancy of purpose for the improvement of product and service)

Q1. Improvement is constantly sought in the school's operation.

Q15. I can explain the main intentions of the school.

Q29. Key stakeholders actively pursue what's regarded as being important in the school.

Q43. Constant commitment to future planning is a feature of the school.

Deming's Point 2: Adopt the new philosophy

Q2. The school demonstrates a clear commitment to continuous quality improvement.

Q16. Change is regarded as an opportunity for improvement.

Q30. The school has adopted a philosophy of continuous improvement.

Q44. Everyone in the school seeks constantly to improve their performance.

Deming's Point 3: Senior staff supervision (Cease dependence on mass inspection)

Q3. My planning is checked regularly by senior staff.

Q17. I am the most important critic of my performance.

Q31. Senior staff frequently inspect my work.

Q45. Test results are the most important measure of student outcomes.

Deming's Point 4: Cost minimization (End the practice of awarding business on price tag alone)

Q4. This school always purchases the lowest priced teaching materials.

Q18. Price is the major factor when purchasing materials or services.

Q32. At this school, buying expensive items is thought to be less cost effective.

Q46. Our school has established useful relationships with quality equipment suppliers.

Deming's Point 5: Improvement in production and service (Improve constantly and forever the system of production and service)

Q5. Effective evaluation is regarded as a key to improved performance.

Q19. The school's operational processes are constantly monitored, with a view to effecting improvements.

Q33. There is a reliance on the gathering of measurable data as a means to enhancing student outcomes.

Q47. The school is determined to improve evaluative procedures.

Deming's Point 6: On-the-job training (Institute training and retraining)

Q6. Professional development of staff is important in the school.

Q20. In this school, on the job training methods relate directly to the staff member's core tasks.

Q34. On the job training is regarded as an integral element to improving performance.

Q48. The school helps me to get better continuously at my job.

Deming's Point 7: Leadership (Institute leadership)

Q7. The school's leaders are keen to help staff improve.

Q21. Leadership strategies in this school are based on a supportive rather than directive culture.

Q35. In this school, senior staff help others to do their jobs better.

Q49. If I need help, I can go confidently to a senior staff member.

Deming's Point 8: Personal empowerment (Drive out fear)

Q8. I'm never afraid to try new things at the school.

Q22. I have to be careful not to make mistakes in my work.

Q36. I feel empowered to identify opportunities for improvement.

Q50. Risk taking is admired in the school.

Deming's Point 9: Teamwork (Break down barriers between staff areas)

Q9. Staff co-operate very well.

Q23. Staff sometimes compete for professional recognition.

Q37. Sharing tasks is a feature of this school's operation.

Q51. This school discourages organisational factors which may inhibit quality outcomes.

Deming's Point 10: Artificial goals (Eliminate slogans, exhortations, and targets for the workforce)

Q10. The school utilises motivational slogans as a means to effect improvements.

Q24. Whole school exhortations assist with the achievement of quality.

Q38 This school believes that arbitrary performance targets contribute towards enhanced outcomes for students.

Q52. In this school programs are evaluated, rather than individuals.

Deming's Point 11: Standards (Eliminate numerical quotas)

Q11. I don't need achievement standards to be set for me in this school.

Q25. I am given set standards for student achievement in my class.

Q39. Everyone in the school is expected to reach a set standard.

Q53. Specific targets for student performance are set for me to achieve.

Deming's Point 12: Recognition (Eliminate barriers to pride in workmanship)

Q12. I am given credit for my accomplishments.

Q26. I am encouraged to feel proud of my achievements.

Q40. Others seek acknowledgement for my good work.

Q54. I am recognised for my personal efforts.

Deming's Point 13: Professional development (Institute a vigorous program of training and retraining)

Q13. I feel personally empowered to commit to continuing education.

Q27. I am solely responsible for improving my performance.

Q41. At this school, I am constantly acquiring new professional skills.

Q55. The school trains me to do a better job.

Deming's Point 14: Responsibility for action (Take action to accomplish the transformation)

Q14. Everyone contributes towards improving the school.

Q28. Not all staff are required to improve in the school.

Q42. All staff share responsibility for ensuring enhancements to the school's operational processes.

Q56. Senior staff are predominantly responsible for school improvement.

APPENDIX D

School Level Environment Questionnaire (SLEQ)
Teacher Actual Form

There are 56 items in this questionnaire. They are statements to be considered in the context of the school in which you work and your *actual* working environment.

Think about how well the statements describe your school environment. Indicate your answer by circling:

SD if you **strongly disagree** with the statement;

D if you **disagree** with the statement;

N if you **neither agree nor disagree** with the statement or **are not sure**;

A if you **agree** with the statement;

SA if you **strongly agree** with the statement.

If you change your mind about a response, cross out the old answer and circle the new choice.

1.	There are many disruptive, difficult students in the school.	SD	D	N	A	SA
2.	I seldom receive encouragement from colleagues.	SD	D	N	A	SA
3.	Teachers frequently discuss teaching methods and strategies with each other.	SD	D	N	A	SA
4.	I am often supervised to ensure that I follow directions correctly.	SD	D	N	A	SA
5.	Decisions about the running of the school are usually made by the principal or a small group of teachers.	SD	D	N	A	SA
6.	It is very difficult to change anything in this school.	SD	D	N	A	SA
7.	The school or department library includes an adequate selection of books and periodicals.	SD	D	N	A	SA
8.	There is constant pressure to keep working.	SD	D	N	A	SA
9.	Most students are helpful and cooperative to teachers.	SD	D	N	A	SA
10.	I feel accepted by other teachers.	SD	D	N	A	SA
11.	Teachers avoid talking with each other about teaching and learning.	SD	D	N	A	SA
12.	I am not expected to conform to a particular teaching style.	SD	D	N	A	SA
13.	I have to refer even small matters to a senior member of staff for a final answer.	SD	D	N	A	SA
14.	Teachers are encouraged to be innovative in this school.	SD	D	N	A	SA
15.	The supply of equipment and resources is adequate.	SD	D	N	A	SA
16.	Teachers have to work long hours to complete all their work.	SD	D	N	A	SA
17.	Most students are pleasant and friendly to teachers.	SD	D	N	A	SA
18.	I am ignored by other teachers.	SD	D	N	A	SA
19.	Professional matters are seldom discussed during staff meetings.	SD	D	N	A	SA
20.	It is considered very important that I closely follow syllabuses and lesson plans.	SD	D	N	A	SA
21.	Action can usually be taken without gaining the approval of the subject department head or a senior member of staff.	SD	D	N	A	SA
22.	There is a great deal of resistance to proposals for curriculum change.	SD	D	N	A	SA
23.	Video equipment, tapes and films are readily available and accessible.	SD	D	N	A	SA
24.	Teachers do not have to work very hard in this school.	SD	D	N	A	SA

(Continued over page)

25.	There are many noisy, badly behaved students.	SD	D	N	A	SA
26.	I feel that I could rely on my colleagues for assistance if I needed it.	SD	D	N	A	SA
27.	Many teachers attend in-service and other professional development courses.	SD	D	N	A	SA
28.	There are few rules and regulations that I am expected to follow.	SD	D	N	A	SA
29.	Teachers frequently are asked to participate in decisions concerning administrative policies and procedures.	SD	D	N	A	SA
30.	Most teachers like the idea of change.	SD	D	N	A	SA
31.	Adequate duplicating facilities and services are available to teachers.	SD	D	N	A	SA
32.	There is no time for teachers to relax.	SD	D	N	A	SA
33.	Students get along well with teachers.	SD	D	N	A	SA
34.	My colleagues seldom take notice of my professional views and opinions.	SD	D	N	A	SA
35.	Teachers show little interest in what is happening in other schools.	SD	D	N	A	SA
36.	I am allowed to do almost as I please in the classroom.	SD	D	N	A	SA
37.	I am encouraged to make decisions without reference to a senior member of staff.	SD	D	N	A	SA
38.	New courses or curriculum materials are seldom implemented in the school.	SD	D	N	A	SA
39.	Tape recorders and cassettes are seldom available when needed.	SD	D	N	A	SA
40.	You can take it easy and still get the work done.	SD	D	N	A	SA
41.	Most students are well-mannered and respectful to the school staff.	SD	D	N	A	SA
42.	I feel that I have many friends among my colleagues at this school.	SD	D	N	A	SA
43.	Teachers are keen to learn from their colleagues.	SD	D	N	A	SA
44.	My classes are expected to use prescribed textbooks and prescribed resource materials.	SD	D	N	A	SA
45.	I must ask my subject department head or senior member of staff before I do most things.	SD	D	N	A	SA
46.	There is much experimentation with different teaching approaches.	SD	D	N	A	SA
47.	Facilities are inadequate for catering for a variety of classroom activities and learning groups of different sizes.	SD	D	N	A	SA
48.	Seldom are there deadlines to be met.	SD	D	N	A	SA
49.	Very strict discipline is needed to control many of the students.	SD	D	N	A	SA
50.	I often feel lonely and left out of things in the staffroom.	SD	D	N	A	SA
51.	Teachers show considerable interest in the professional activities of their colleagues.	SD	D	N	A	SA
52.	I am expected to maintain very strict control in the classroom.	SD	D	N	A	SA
53.	I have very little say in the running of the school.	SD	D	N	A	SA
54.	New and different ideas are always being tried in this school.	SD	D	N	A	SA
55.	Projectors and filmstrips, transparencies and films are usually available when needed.	SD	D	N	A	SA
56.	It is hard to keep up with your workload.	SD	D	N	A	SA

Office use only

SS .... Aff .... PI .... SF .... PDM .... Inn .... RA .... WP ....

APPENDIX E

APPENDIX E

School Learning Environment Questionnaire (SLEQ)

SLEQ Construct 1: Student support

Q1. There are many disruptive, difficult students in the school.

Q9. Most students are helpful and cooperative to teachers.

Q17. Most students are pleasant and friendly to teachers.

Q25. There are many noisy, badly behaved students.

Q33. Students get along well with teachers.

Q41. Most students are well-mannered and respectful to the school staff.

Q49. Very strict discipline is needed to control many of the students.

SLEQ Construct 2: Affiliation

Q2. I seldom receive encouragement from colleagues.

Q10. I feel accepted by other teachers.

Q18. I am ignored by other teachers.

Q26. I feel that I could rely on my colleagues for assistance if I needed it.

Q34. My colleagues seldom take notice of my professional views and opinions.

Q42. I feel that I have many friends among my colleagues at this school.

Q50. I often feel lonely and left out of things in the staffroom.

SLEQ Construct 3: Professional interest

Q3. Teachers frequently discuss teaching methods and strategies with each other.

Q11. Teachers avoid talking with each other about teaching and learning.

Q19. Professional matters are seldom discussed during staff meetings.

Q27. Many teachers attend in-service and other professional development courses.

Q35. Teachers show little interest in what is happening in other schools.

Q43. Teachers are keen to learn from their colleagues.

Q51. Teachers show considerable interest in the professional activities of their colleagues.

SLEQ Construct 4: Staff freedom

Q4. I am often supervised to ensure that I follow directions correctly.

Q12. I am not expected to conform to a particular teaching style.

Q20. It is considered very important that I closely follow syllabuses and lesson plans.

Q28. There are few rules and regulations that I am expected to follow.

Q36. I am allowed to do almost as I please in the classroom.

Q44. My classes are expected to use prescribed text books and prescribed resource materials.

Q52. I am expected to maintain very strict control in the classroom.

SLEQ Construct 5: Participatory decision making

Q5. Decisions about running the school are usually made by the principal or a small group of teachers.

Q13. I have to refer even small matters to a senior member of staff for a final answer.

Q21. Action can usually be taken without gaining the approval of the subject department head or senior member of staff.

Q29. Teachers frequently are asked to participate in decisions concerning administrative policies and procedures.

Q37. I am encouraged to make decisions without reference to a senior member of staff.

Q45. I must ask my subject department head or senior member of staff before I do most things.

Q53. I have very little say in the running of the school.

SLEQ Construct 6: Innovation

Q6. It is very difficult to change anything in this school.

Q14. Teachers are encouraged to be innovative in this school.

Q22. There is a great deal of resistance to proposals for curriculum change.

Q30. Most teachers like the idea of change.

Q38. New courses or curriculum materials are seldom implemented in the school.

Q46. There is much experimentation with different teaching approaches.

Q54. New and different ideas are always being tried in this school.

SLEQ Construct 7: Resource adequacy

Q7. The school or department library includes an adequate selection of books and periodicals.

Q15. The supply of equipment and resources is adequate.

Q23. Video equipment, tapes and films are readily available and accessible.

Q31. Adequate duplicating facilities and services are available to teachers.

Q39. Tape recorders and cassettes are seldom available when needed.

Q47. Facilities are inadequate for catering for a variety of activities and learning groups of different sizes.

Q55. Projectors and filmstrips, transparencies and films are usually available when needed.

SLEQ Construct 8: Work pressure

Q8. There is constant pressure to keep working.

Q16. Teachers have to work long hours to complete all their work.

Q24. Teachers do not have to work very hard in this school.

Q32. There is no time for teachers to relax.

Q40. You can take it easy and still get the work done.

Q48. Seldom are there deadlines to meet.

Q56. It is hard to keep up with your workload.

APPENDIX F

2 Allison Avenue
RIVERSIDE TAS 7250

3 December 1994

Dear *(teacher)*

Thank you for agreeing to participate in my study on schools and Total Quality Management (TQM). Your support and assistance is greatly appreciated.

I thought it may be useful to provide some further information, as well as to expand on what it is that I'm seeking to research, and how I'm planning to go about it.

I enrolled as a student in the University of Tasmania's Faculty of Education Master of Education by Research program in 1991, but didn't settle finally on my actual topic until 1992. My supervisor is Dr Neville Grady.

I am investigating the nature of, and links between,

- teachers' perceptions of the degree to which their school is utilizing the principles of Total Quality Management, as evidenced by their application of Deming's Fourteen Points
- those teachers' perceptions of their school's organizational climate, and
- the metaphorical images those teachers hold of their school.

The details of my study have been submitted to the University's Ethics Committee, and permission to conduct research in government schools has been sought and approved from Graham Harrington, Deputy Secretary of The Department of Education and The Arts.

I am now seeking the co-operation of school personnel in order to gather data to inform the work. I am very conscious of the demands placed on school teachers, and have consequently designed the study so that imposts on people who choose to be involved will be as minimal as possible, whilst maintaining consistency with good research practice.

Specifically, I am asking you to do three things:

1. complete the enclosed **Personal Data Form**,
2. complete the questionnaire Schools and Total Quality Management (**SATQM**), an instrument being developed for this study. Currently, SATQM contains 56 items requiring responses of the Strongly Agree-Strongly Disagree type. For example, teachers are asked to respond to such items as "I understand, and can explain, the main intentions of the school" and "Sharing tasks is a feature of this school's operation".
3. complete the Actual form of the Fisher and Fraser instrument called School Level Environment Questionnaire (**SLEQ**). This has been used quite widely in Tasmania and elsewhere and each of the questionnaires contains 56 items, which again, require responses of the Strongly Agree-Strongly Disagree type. For example, teachers are asked to respond to statements such as "Most students are helpful and co-operative to teachers" and "There is constant pressure to keep working".

You will not have to identify yourself, as it is not planned to have to conduct interviews, nor will you need to be involved in scoring the questionnaires. There will not be any costs in terms of photocopying or postage to be borne by the school or participants.

In order to preserve the anonymity of the respondents, I have asked your principal to distribute packages to volunteer teachers and ask them to return the completed questionnaires direct to me in reply-paid envelopes, or in the case of schools within the Launceston area, I may be able to collect them personally.

In terms of the selection process of volunteer teachers, I have requested that your principal make his/her selections in a balanced way according to the following criteria:

- **teaching experience** - variety of years of teaching (total, and at this school), and number of teaching locations,
- **gender** - mix of male and female, and
- **level of teaching expertise** - variety of primary, early childhood, specialist.

I am excited about the potential of this study to inform the future development of primary schools, and from this point of view, I ask that you complete and return the package with minimal delay. I do appreciate your assistance in this regard.

Following data analysis, which I anticipate being sometime later this year, I hope that dissemination of generalized findings will be possible before the end of 1994. Of course, neither particular schools nor individuals will be identified in the dissemination process.

Thank you again for your tolerance and assistance to this stage, and I am hopeful of there being some educationally worthwhile outcomes for you from the project.

If you have any further queries, please feel free to contact me on (003) 362582 (work), (003) 272496 (home), or by fax on (003) 345320. For now, however, please complete the appropriate forms and, without separating them, return them to me in the enclosed pre-paid envelope.

Thank you in anticipation.

Yours sincerely

John Laing

APPENDIX G

PERSONAL DATA FORM

Please complete this data sheet before proceeding to the questionnaires. You will need to either write your responses in the spaces provided or tick the appropriate boxes.

1. What is the name of the school at which you teach?	.....
2. What is your gender?	❑ male ❑ female
3. What is your major formal role in the school (e.g. classroom teacher, AST2, principal)?	.....
4. What is your major teaching area (e.g. Early childhood teacher, music teacher)?	.....
5. How long have you been at your present school?	❑ less than 1 year ❑ from 1-3 years ❑ from 4-10 years ❑ from 11-20 years ❑ more than 20 years
6. Over how many years does your total employment experience in schools extend?	❑ less than 1 year ❑ from 1-3 years ❑ from 4-10 years ❑ from 11-20 years ❑ more than 20 years
7. In how many schools have you taught, including this one?	.....
8. What is your school's distance from District Office?	❑ less than 10 km ❑ from 11-20 km ❑ from 21-50 km ❑ more than 50 km

Thank you again for your co-operation and assistance in this project.

John Laing
3 December, 1998

APPENDIX H

Schools and Total Quality Management (SATQM)

The principles of **Total Quality Management** (TQM) have been applied successfully to businesses over a considerable period of time, yet there has been only minimal experience of such developments in the school context.

This questionnaire seeks to gather data about teachers' perceptions of their schools **as they actually are,** in relation to the application of TQM techniques.

Think about how well the 56 statements describe the functions and operations of your school. Indicate your responses by circling:

SA if you **strongly agree** with the statement;

A if you **agree** with the statement;

N if you **neither agree nor disagree** with the statement, or **are not sure;**

D if you **disagree** with the statement;

SD if you **strongly disagree** with the statement.

If you change your mind about a response, cross out the old answer and circle the new selection.

Please ensure that you respond to **every item.** Thank you for your assistance.

John Laing

SATQM

1. Improvement is constantly sought in the school's operation.	SD	D	N	A	SA
2. The school demonstrates a clear commitment to continuous quality improvement.	SD	D	N	A	SA
3. My planning is checked regularly by senior staff.	SD	D	N	A	SA
4. This school always purchases the lowest priced teaching materials.	SD	D	N	A	SA
5. Effective evaluation is regarded as a key to improved performance.	SD	D	N	A	SA
6. Professional development of staff is important in the school.	SD	D	N	A	SA
7. The school's leaders are keen to help staff improve.	SD	D	N	A	SA
8. I'm never afraid to try new things at the school.	SD	D	N	A	SA
9. Staff co-operate very well.	SD	D	N	A	SA
10. The school utilises motivational slogans as a means to effect improvements.	SD	D	N	A	SA
11. I don't need achievement standards to be set for me in this school.	SD	D	N	A	SA
12. I am given credit for my accomplishments.	SD	D	N	A	SA
13. I feel personally empowered to commit to continuing education.	SD	D	N	A	SA
14. Everyone contributes towards improving the school.	SD	D	N	A	SA
15. I can explain the main intentions of the school.	SD	D	N	A	SA
16. Change is regarded as an opportunity for improvement.	SD	D	N	A	SA
17. I am the most important critic of my performance.	SD	D	N	A	SA
18. Price is the major factor when purchasing materials or services.	SD	D	N	A	SA
19. The school's operational processes are constantly monitored, with a view to effecting improvements.	SD	D	N	A	SA
20. In this school, on the job training methods relate directly to the staff member's core tasks.	SD	D	N	A	SA
21. Leadership strategies in this school are based on a supportive rather than directive culture.	SD	D	N	A	SA
22. I have to be careful not to make mistakes in my work.	SD	D	N	A	SA
23. Staff sometimes compete for professional recognition.	SD	D	N	A	SA
24. Whole school exhortations assist with the achievement of quality.	SD	D	N	A	SA
25. I am given set standards for student achievement in my class.	SD	D	N	A	SA
26. I am encouraged to feel proud of my achievements.	SD	D	N	A	SA
27. I am solely responsible for improving my performance.	SD	D	N	A	SA
28. Not all staff are required to improve in the school.	SD	D	N	A	SA
29. Key stakeholders actively pursue what's regarded as being important in the school.	SD	D	N	A	SA

30. The school has adopted a philosophy of continuous improvement.	SD	D	N	A	SA
31. Senior staff frequently inspect my work.	SD	D	N	A	SA
32. At this school, buying expensive items is thought to be less cost effective.	SD	D	N	A	SA
33. There is a reliance on the gathering of measurable data as a means to enhancing student outcomes.	SD	D	N	A	SA
34. On the job training is regarded as an integral element to improving performance.	SD	D	N	A	SA
35. In this school, senior staff help others to do their jobs better.	SD	D	N	A	SA
36. I feel empowered to identify opportunities for improvement.	SD	D	N	A	SA
37. Sharing tasks is a feature of this school's operation.	SD	D	N	A	SA
38 This school believes that arbitrary performance targets contribute towards enhanced outcomes for students.	SD	D	N	A	SA
39. Everyone in the school is expected to reach a set standard.	SD	D	N	A	SA
40. Others seek acknowledgement for my good work.	SD	D	N	A	SA
41. At this school, I am constantly acquiring new professional skills.	SD	D	N	A	SA
42. All staff share responsibility for ensuring enhancements to the school's operational processes.	SD	D	N	A	SA
43. Constant commitment to future planning is a feature of the school.	SD	D	N	A	SA
44. Everyone in the school seeks constantly to improve their performance.	SD	D	N	A	SA
45. Test results are the most important measure of student outcomes.	SD	D	N	A	SA
46. Our school has established useful relationships with quality equipment suppliers.	SD	D	N	A	SA
47. The school is determined to improve evaluative procedures.	SD	D	N	A	SA
48. The school helps me to get better continuously at my job.	SD	D	N	A	SA
49. If I need help, I can go confidently to a senior staff member.	SD	D	N	A	SA
50. Risk taking is admired in the school.	SD	D	N	A	SA
51. This school discourages organisational factors which may inhibit quality outcomes.	SD	D	N	A	SA
52. In this school programs are evaluated, rather than individuals.	SD	D	N	A	SA
53. Specific targets for student performance are set for me to achieve.	SD	D	N	A	SA
54. I am recognised for my personal efforts.	SD	D	N	A	SA
55. The school trains me to do a better job.	SD	D	N	A	SA
56. Senior staff are predominantly responsible for school improvement.	SD	D	N	A	SA

APPENDIX I

APPENDIX I

Performance Domains of the National Commission for the Principalship

Leadership. Formulating goals with individuals or groups; initiating and maintaining direction with groups and guiding them to the accomplishments of tasks; setting priorities for one's school in the context of community and district priorities and student and staff needs; integrating own and others' ideas for task accomplishment; initiating and planning organisational change.

Information collection. Gather relevant data, facts, and impressions from a variety of sources; seeking knowledge about policies, mandates, and laws; managing the data flow; classifying and organising information for use in decision making and monitoring.

Problem analysis. Identifying the important elements of a problem situation by analysing relevant information; framing problems; identifying possible causes; identifying additional needed information; framing and reframing possible solutions; exhibiting conceptual flexibility; assisting others to form reasoned opinions about problems and issues.

Judgement. Reaching logical conclusions and making high quality, timely decisions given the best available information.

Organisational oversight. Planning and scheduling one's own and other's work so that resources are used appropriately, and short- and long-term priorities and goals are met.

Implementation. Making things happen; putting programs and plans into action; applying management technologies; applying methods of organisational change including collaborative processes; facilitating tasks; establishing progress checkpoints; considering alternative approaches; providing 'mid-course' corrections when actual outcomes start to diverge from intended outcomes; adapting to new conditions.

Delegation. Assigning projects or tasks together with clear authority to accomplish them and responsibility for their timely and acceptable completion.

Instructional program. Envisioning and enabling instructional and auxiliary programs for the improvement of teaching and learning; recognising the developmental needs of students; ensuring appropriate instructional methods; designing positive learning experiences; accommodating differences in cognition and achievement; mobilising the participation of appropriate people or groups to develop these programs and to establish a positive learning environment.

Curriculum design. Interpreting school district curricula; planning and implementing with staff a framework for instruction; initiating needs analyses and monitoring social and technological developments as they affect curriculum; responding to international content levels; adjusting content as needs and conditions change.

Student guidance and development. Providing for student guidance, counselling, and auxiliary services; utilising community organisations; responding to family needs; enlisting the participation of appropriate people and groups to design and conduct these programs and to connect schooling with plans for adult life; planning for a comprehensive program of student activities.

Staff development. Identifying with participants the professional needs of individuals and groups; planning and organising programs to improve staff effectiveness; supervising individuals and groups; engaging staff and others to plan and participate in recruitment and development; initiating self-development.

Measurement and evaluation. Determining what diagnostic information is needed about students, staff and the school environment; examining the extent to which outcomes meet or exceed previously defined standards, goals, or priorities for individuals or groups; drawing inferences for program revisions; interpreting measurements or evaluations for others; relating programs to desired outcomes; developing equivalent measures of competence.

Resource allocation. Planning and developing the budget with appropriate staff, seeking, allocating, and adjusting fiscal, human, and material resources; utilising the physical plant; monitoring resource use and reporting results.

Motivating others. Building commitment to a course of action; creating and channelling the energy of self and others; planning and encouraging participation; supporting innovation; recognising and rewarding effective

performance; providing coaching, guidance, or correction for performance that needs improvement; serving as a role model.

Sensitivity. Perceiving the needs and concerns of others; dealing with others tactfully; working with others in emotionally stressful situations and in conflict; managing conflict; obtaining feedback; recognising multi-cultural sensibilities.

Oral expression. Making oral presentations that are clear and easy to understand; clarifying and restating questions; responding, reviewing and summarising for groups.

Written expression. Expressing ideas clearly in writing; writing appropriately for different audiences such as students, teachers, and parents; preparing brief memoranda.

Philosophical and cultural values. Acting with reasonable understanding of the role of education in a democratic society and in accord with accepted ethical standards; recognising philosophical and historical influences in education; reflecting understanding of American culture, including current social and economic issues related to education; resognising global influences on students and society.

Legal and regulatory applications. Acting in accordance with relevant laws, rules and policies; recognising government influences on education; working within local rules, procedures, and directives, administering contracts.

Policy and political influences. Identifying relationships between public policy and education. recognising policy issues; examining and affecting policies individually and through public and professional groups; relating policy initiatives to the welfare of students; addressing ethical issues.

Public and media relationships. Developing common perceptions about school issues; interacting with parental and community opinion leaders; understanding and responding skilfully to the electronic and printed news media; initiating and reporting news through appropriate channels; enlisting public participation; recognising and providing for market segments.

APPENDIX J

APPENDIX J

Analysis of Follow-up Study

SATQM RESULTS

SATQM1

	Valid			
	3.00	4.00	5.00	Total
Frequency	1	9	16	26
Valid Percent	3.8	34.6	61.5	100.0

SATQM2

	Valid			
	3.00	4.00	5.00	Total
Frequency	3	6	17	26
Valid Percent	11.5	23.1	65.4	100.0

SATQM3

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	6	3	14	25
Valid Percent	8.0	24.0	12.0	56.0	100.0

SATQM4

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	6	15	4	26
Valid Percent	3.8	23.1	57.7	15.4	100.0

SATQM5

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	1	1	12	11	26
Valid Percent	3.8	3.8	3.8	46.2	42.3	100.0

SATQM6

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	1	2	17	5	26
Valid Percent	3.8	3.8	7.7	65.4	19.2	100.0

SATQM7

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	5	14	6	26
Valid Percent	3.8	19.2	53.8	23.1	100.0

SATQM8

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	1	19	4	26
Valid Percent	7.7	3.8	73.1	15.4	100.0

SATQM9

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	1	4	13	7	26
Valid Percent	3.8	3.8	15.4	50.0	26.9	100.0

SATQM10

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	11	7	6	2	26
Valid Percent	42.3	26.9	23.1	7.7	100.0

SATQM11

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	2	4	5	8	7	26
Valid Percent	7.7	15.4	19.2	30.8	26.9	100.0

SATQM12

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	5	15	4	26
Valid Percent	7.7	19.2	57.7	15.4	100.0

SATQM13

	Valid			
	3.00	4.00	5.00	Total
Frequency	3	18	5	26
Valid Percent	11.5	69.2	19.2	100.0

SATQM14

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	2	15	8	26
Valid Percent	3.8	7.7	57.7	30.8	100.0

SATQM15

	Valid			
	3.00	4.00	5.00	Total
Frequency	1	17	8	26
Valid Percent	3.8	65.4	30.8	100.0

SATQM16

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	4	14	6	26
Valid Percent	7.7	15.4	53.8	23.1	100.0

SATQM17

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	3	13	9	26
Valid Percent	3.8	11.5	50.0	34.6	100.0

SATQM18

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	3	6	14	2	26
Valid Percent	3.8	11.5	23.1	53.8	7.7	100.0

SATQM19

	Valid			
	3.00	4.00	5.00	Total
Frequency	2	16	8	26
Valid Percent	7.7	61.5	30.8	100.0

SATQM20

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	8	10	5	25
Valid Percent	8.0	32.0	40.0	20.0	100.0

SATQM21

	Valid			
	3.00	4.00	5.00	Total
Frequency	2	13	11	26
Valid Percent	7.7	50.0	42.3	100.0

SATQM22

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	2	3	12	8	26
Valid Percent	3.8	7.7	11.5	46.2	30.8	100.0

SATQM23

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	3	9	8	6	26
Valid Percent	11.5	34.6	30.8	23.1	100.0

SATQM24

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	11	9	3	3	26
Valid Percent	42.3	34.6	11.5	11.5	100.0

SATQM25

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	4	4	12	5	25
Valid Percent	16.0	16.0	48.0	20.0	100.0

SATQM26

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	7	12	6	26
Valid Percent	3.8	26.9	46.2	23.1	100.0

SATQM27

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	13	3	7	2	26
Valid Percent	3.8	50.0	11.5	26.9	7.7	100.0

SATQM28

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	3	2	18	3	26
Valid Percent	11.5	7.7	69.2	11.5	100.0

SATQM29

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	6	17	1	26
Valid Percent	7.7	23.1	65.4	3.8	100.0

SATQM30

	Valid		
	4.00	5.00	Total
Frequency	15	10	25
Valid Percent	60.0	40.0	100.0

SATQM31

	Valid				
	1.00	3.00	4.00	5.00	Total
Frequency	1	3	11	10	25
Valid Percent	4.0	12.0	44.0	40.0	100.0

SATQM32

	Valid				
	1.00	3.00	4.00	5.00	Total
Frequency	1	8	16	1	26
Valid Percent	3.8	30.8	61.5	3.8	100.0

SATQM33

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	4	10	6	3	3	26
Valid Percent	15.4	38.5	23.1	11.5	11.5	100.0

SATQM34

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	3	19	2	26
Valid Percent	7.7	11.5	73.1	7.7	100.0

SATQM35

	Valid		
	4.00	5.00	Total
Frequency	20	6	26
Valid Percent	76.9	23.1	100.0

SATQM36

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	1	21	3	26
Valid Percent	3.8	3.8	80.8	11.5	100.0

SATQM37

	Valid			
	2.00	4.00	5.00	Total
Frequency	1	18	7	26
Valid Percent	3.8	69.2	26.9	100.0

SATQM38

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	8	8	7	2	26
Valid Percent	3.8	30.8	30.8	26.9	7.7	100.0

SATQM39

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	8	5	8	5	26
Valid Percent	30.8	19.2	30.8	19.2	100.0

SATQM40

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	3	6	11	6	26
Valid Percent	11.5	23.1	42.3	23.1	100.0

SATQM41

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	2	19	3	26
Valid Percent	7.7	7.7	73.1	11.5	100.0

SATQM42

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	1	16	7	26
Valid Percent	7.7	3.8	61.5	26.9	100.0

SATQM43

	Valid			
	3.00	4.00	5.00	Total
Frequency	3	17	6	26
Valid Percent	11.5	65.4	23.1	100.0

SATQM44

	Valid			
	3.00	4.00	5.00	Total
Frequency	7	18	1	26
Valid Percent	26.9	69.2	3.8	100.0

SATQM45

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	3	12	10	26
Valid Percent	3.8	11.5	46.2	38.5	100.0

SATQM46

	Valid			
	3.00	4.00	5.00	Total
Frequency	13	11	2	26
Valid Percent	50.0	42.3	7.7	100.0

SATQM47

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	6	17	2	26
Valid Percent	3.8	23.1	65.4	7.7	100.0

SATQM48

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	2	18	4	26
Valid Percent	7.7	7.7	69.2	15.4	100.0

SATQM49

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	3	1	10	12	26
Valid Percent	11.5	3.8	38.5	46.2	100.0

SATQM50

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	6	14	5	26
Valid Percent	3.8	23.1	53.8	19.2	100.0

SATQM51

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	6	11	8	26
Valid Percent	3.8	23.1	42.3	30.8	100.0

SATQM53

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	5	11	8	26
Valid Percent	7.7	19.2	42.3	30.8	100.0

SATQM54

	Valid			
	3.00	4.00	5.00	Total
Frequency	4	13	9	26
Valid Percent	15.4	50.0	34.6	100.0

SATQM55

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	2	3	19	1	26
Valid Percent	3.8	7.7	11.5	73.1	3.8	100.0

SATQM56

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	5	15	4	26
Valid Percent	7.7	19.2	57.7	15.4	100.0

SLEQ RESULTS

SLEQ1

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	6	3	15	1	25
Valid Percent	24.0	12.0	60.0	4.0	100.0

SLEQ2

	Valid			
	3.00	4.00	5.00	Total
Frequency	6	14	6	26
Valid Percent	23.1	53.8	23.1	100.0

SLEQ3

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	4	19	2	26
Valid Percent	3.8	15.4	73.1	7.7	100.0

SLEQ4

	Valid		
	4.00	5.00	Total
Frequency	9	17	26
Valid Percent	34.6	65.4	100.0

SLEQ5

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	2	2	18	3	26
Valid Percent	3.8	7.7	7.7	69.2	11.5	100.0

SLEQ6

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	2	2	17	4	26
Valid Percent	3.8	7.7	7.7	65.4	15.4	100.0

SLEQ7

	Valid			
	3.00	4.00	5.00	Total
Frequency	2	20	4	26
Valid Percent	7.7	76.9	15.4	100.0

SLEQ8

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	3	8	2	10	3	26
Valid Percent	11.5	30.8	7.7	38.5	11.5	100.0

SLEQ9

	Valid			
	3.00	4.00	5.00	Total
Frequency	1	19	5	25
Valid Percent	4.0	76.0	20.0	100.0

SLEQ10

	Valid			
	2.00	4.00	5.00	Total
Frequency	1	18	7	26
Valid Percent	3.8	69.2	26.9	100.0

SLEQ11

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	2	15	8	26
Valid Percent	3.8	7.7	57.7	30.8	100.0

SLEQ12

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	2	12	10	26
Valid Percent	7.7	7.7	46.2	38.5	100.0

SLEQ13

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	1	15	9	26
Valid Percent	3.8	3.8	57.7	34.6	100.0

SLEQ14

	Valid			
	3.00	4.00	5.00	Total
Frequency	3	18	5	26
Valid Percent	11.5	69.2	19.2	100.0

SLEQ15

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	2	3	6	14	1	26
Valid Percent	7.7	11.5	23.1	53.8	3.8	100.0

SLEQ16

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	8	3	13	1	26
Valid Percent	3.8	30.8	11.5	50.0	3.8	100.0

SLEQ17

	Valid		
	4.00	5.00	Total
Frequency	22	4	26
Valid Percent	84.6	15.4	100.0

SLEQ18

	Valid			
	3.00	4.00	5.00	Total
Frequency	1	13	12	26
Valid Percent	3.8	50.0	46.2	100.0

SLEQ19

	Valid			
	3.00	4.00	5.00	Total
Frequency	3	19	4	26
Valid Percent	11.5	73.1	15.4	100.0

SLEQ20

	Valid			
	3.00	4.00	5.00	Total
Frequency	3	13	10	26
Valid Percent	11.5	50.0	38.5	100.0

SLEQ21

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	3	8	13	2	26
Valid Percent	11.5	30.8	50.0	7.7	100.0

SLEQ22

	Valid			
	3.00	4.00	5.00	Total
Frequency	8	16	1	25
Valid Percent	32.0	64.0	4.0	100.0

SLEQ23

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	4	1	18	2	26
Valid Percent	3.8	15.4	3.8	69.2	7.7	100.0

SLEQ24

	Valid		
	4.00	5.00	Total
Frequency	14	12	26
Valid Percent	53.8	46.2	100.0

SLEQ25

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	4	1	19	2	26
Valid Percent	15.4	3.8	73.1	7.7	100.0

SLEQ26

	Valid		
	4.00	5.00	Total
Frequency	16	10	26
Valid Percent	61.5	38.5	100.0

SLEQ27

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	3	17	5	26
Valid Percent	3.8	11.5	65.4	19.2	100.0

SLEQ28

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	5	1	15	5	26
Valid Percent	19.2	3.8	57.7	19.2	100.0

SLEQ29

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	4	5	16	1	26
Valid Percent	15.4	19.2	61.5	3.8	100.0

SLEQ30

	Valid			
	2.00	3.00	4.00	Total
Frequency	4	15	7	26
Valid Percent	15.4	57.7	26.9	100.0

SLEQ31

	Valid				
	1.00	2.00	3.00	4.00	Total
Frequency	3	6	5	12	26
Valid Percent	11.5	23.1	19.2	46.2	100.0

SLEQ32

	Valid					
	1.00	2.00	3.00	4.00	5.00	Total
Frequency	1	15	2	7	1	26
Valid Percent	3.8	57.7	7.7	26.9	3.8	100.0

SLEQ33

	Valid		
	4.00	5.00	Total
Frequency	20	5	25
Valid Percent	80.0	20.0	100.0

SLEQ34

	Valid			
	2.00	4.00	5.00	Total
Frequency	2	19	5	26
Valid Percent	7.7	73.1	19.2	100.0

SLEQ35

	Valid			
	2.00	3.00	4.00	Total
Frequency	2	6	18	26
Valid Percent	7.7	23.1	69.2	100.0

SLEQ36

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	6	4	12	3	25
Valid Percent	24.0	16.0	48.0	12.0	100.0

SLEQ37

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	6	6	11	2	25
Valid Percent	24.0	24.0	44.0	8.0	100.0

SLEQ38

	Valid			
	2.00	3.00	4.00	Total
Frequency	1	2	23	26
Valid Percent	3.8	7.7	88.5	100.0

SLEQ39

	Valid				
	1.00	2.00	3.00	4.00	Total
Frequency	1	2	4	19	26
Valid Percent	3.8	7.7	15.4	73.1	100.0

SLEQ40

	Valid			
	2.00	4.00	5.00	Total
Frequency	1	19	5	25
Valid Percent	4.0	76.0	20.0	100.0

SLEQ41

	Valid			
	2.00	4.00	5.00	Total
Frequency	1	21	4	26
Valid Percent	3.8	80.8	15.4	100.0

SLEQ42

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	3	17	5	26
Valid Percent	3.8	11.5	65.4	19.2	100.0

SLEQ43

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	3	19	3	26
Valid Percent	3.8	11.5	73.1	11.5	100.0

SLEQ44

	Valid		
	4.00	5.00	Total
Frequency	13	12	25
Valid Percent	52.0	48.0	100.0

SLEQ45

	Valid		
	4.00	5.00	Total
Frequency	16	9	25
Valid Percent	64.0	36.0	100.0

SLEQ46

	Valid			
	2.00	3.00	4.00	Total
Frequency	3	10	13	26
Valid Percent	11.5	38.5	50.0	100.0

SLEQ47

	Valid				
	1.00	2.00	3.00	4.00	Total
Frequency	2	4	8	12	26
Valid Percent	7.7	15.4	30.8	46.2	100.0

SLEQ48

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	6	2	15	3	26
Valid Percent	23.1	7.7	57.7	11.5	100.0

SLEQ49

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	2	4	16	4	26
Valid Percent	7.7	15.4	61.5	15.4	100.0

SLEQ50

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	1	1	20	4	26
Valid Percent	3.8	3.8	76.9	15.4	100.0

SLEQ51

	Valid			
	2.00	3.00	4.00	Total
Frequency	3	2	21	26
Valid Percent	11.5	7.7	80.8	100.0

SLEQ52

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	4	6	14	2	26
Valid Percent	15.4	23.1	53.8	7.7	100.0

SLEQ53

	Valid				
	2.00	3.00	4.00	5.00	Total
Frequency	3	4	14	4	25
Valid Percent	12.0	16.0	56.0	16.0	100.0

SLEQ54

	Valid			
	2.00	3.00	4.00	Total
Frequency	3	8	15	26
Valid Percent	11.5	30.8	57.7	100.0

SLEQ55

	Valid			
	2.00	3.00	4.00	Total
Frequency	2	10	14	26
Valid Percent	7.7	38.5	53.8	100.0

SLEQ56

	Valid			
	2.00	3.00	4.00	Total
Frequency	11	5	10	26
Valid Percent	42.3	19.2	38.5	100.0